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New Board Must Check Losses

Harding's Appointees, Freed of Handicaps Restricting Old Board, Should Stop Promptly Huge Money Wastage

HISTORY records that barely more than four years have intervened since the appointment of the first shipping board. Enough deeds and misdeeds are crowded into that 52-month period to force a mental readjustment to history's figures. The period seems too short to accommodate the transmutation from an advisory board which would solve America's marine problems, to an industrial organization building millions of tons of ships and expending billions of dollars, and back to an operating agency endeavoring without great success to run its ships as a commercial venture but endeavoring with success to continue its wholesale distribution of federal funds. A suitable epitaph on the old board must take reckoning of its phenomenal accomplishment as a war shipbuilding agency. But writing an epitaph now is difficult without surrendering to the inclination to comment caustically on ship operating adventures since the armistice.

Saving Money Is the Big Job

The president officially starts the board on the right track in his announcing statement that the new board will strive to end the huge losses resulting from the present mode of handling government vessels. He admits the discouraging features of the present situation as well as the manifest impossibilities of bringing about new and improved conditions by a mere wave of the hand.

The new board starts in business freed of the motley inheritances which have circumscribed the activities of the decedent board with the tenacity of a Chinaman's forefathers. Wiping the slate clean is not only to be recommended on sanitary grounds but has frequently served as a stimulus to real accomplishment. In the case of the old board, it could neither wipe the slate clean nor find room for new markings. Its term of utility had ended but it was still serving sentence.

Advice to the shipping board has been offered during the past 52 months in quantities which have made this product rank high in statistics of

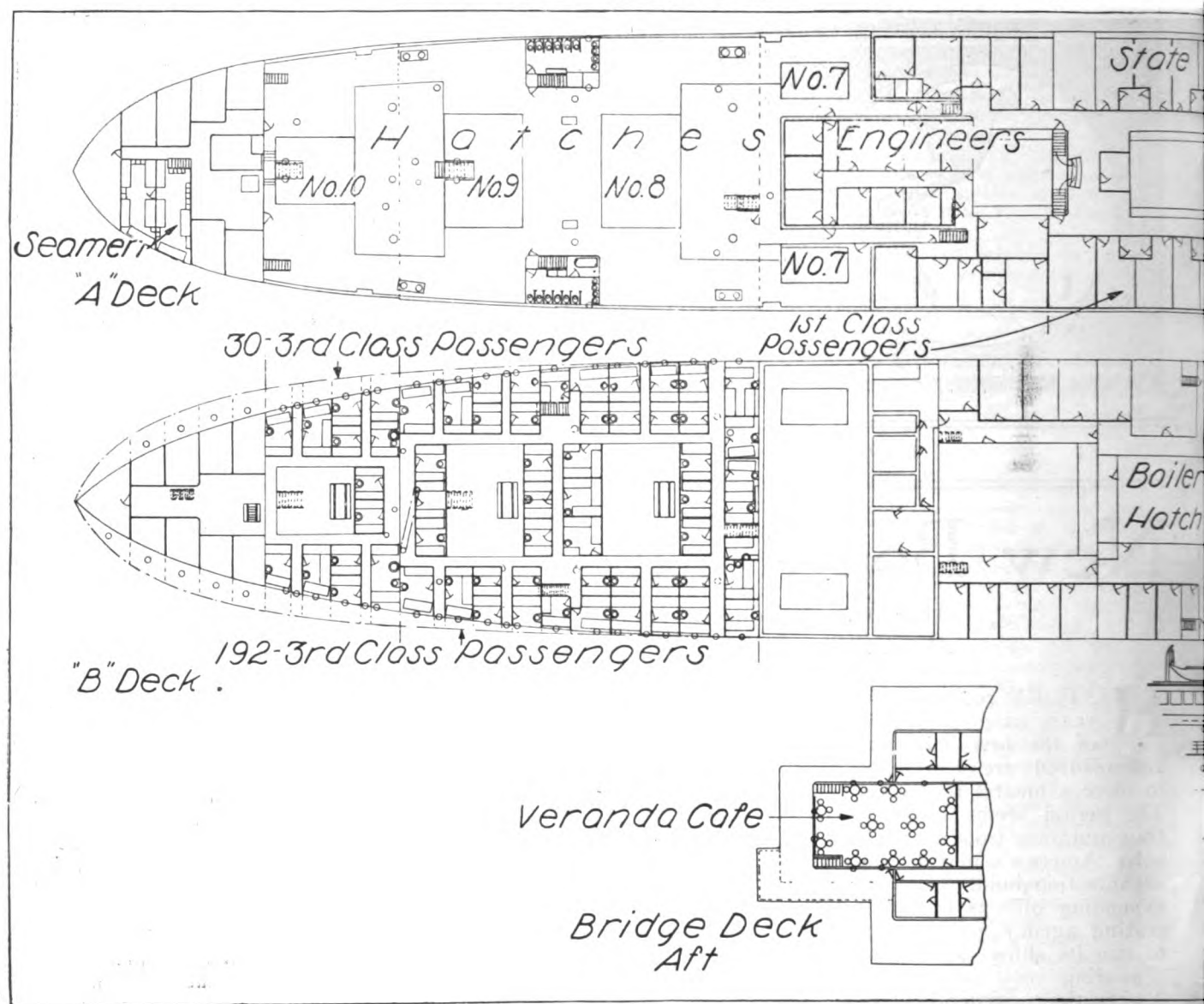
American production. The one admonition which the new board should receive as it starts business is to obey the decision of the American people to stop the tremendous wastage of public funds. This can be accomplished in a manner which will retain for this country its present great fleet of new and efficient commerce carriers. An apparent solution offered by those who are not inclined to study this great national problem is either to sink the ships outright or to sell them at any figure to anybody anywhere. The nation can not evade its duties to American business nor stop a heavy monetary loss by such a violation of economic laws.

Common Sense Rules This Platform

James A. Farrell, regarded by many as the best choice for the shipping board chairmanship has drawn the following platform for American shipping policy: Today it is inexpedient to attempt to sell shipping board vessels; American exporters, importers and travelers should use American vessels; shipping board should withdraw from all but supervisory activity and should charter its steamers on a bare-boat basis or on time charter with option of purchase; the operating costs of American ships must be reduced to equality with foreign costs; American ship laws which impose on American ships a competitive disadvantage estimated at 5 per cent on the capital investment must be repealed.

The above program savors of sound common sense. It calls for business judgment on the fundamental recommendation of getting the government out of the shipping business and thus checking today's monumental losses. This kind of business judgment is that which Chairman Lasker is reputed to possess.

A wave of the hand will not correct America's marine problems. But everyone has had enough of the hand motion which signs another check drawn on the United States treasury.



DECK PLANS OF AMERICAN COMBINATION PASSENGER AND FREIGHT LINER CENTENNIAL STATE

American Liners for North Atlantic

FOUR of the 502-foot passenger steamers, built for the Emergency Fleet corporation are to be refitted with steerage accommodations for the transatlantic trade. Two of these will be fitted with open accommodations for the tropical trade and two will be fitted with enclosed quarters for the north Atlantic trade. The tropical trade ships will be operated by the Ward line between Spanish ports and Cuba. The run complete will be from New York via Havana, but the third-class movement will be chiefly to and from Havana and the requirements for transporting steerage passengers in the warmer climate are not so rigid as where the transit is made through the cooler winds of the north.

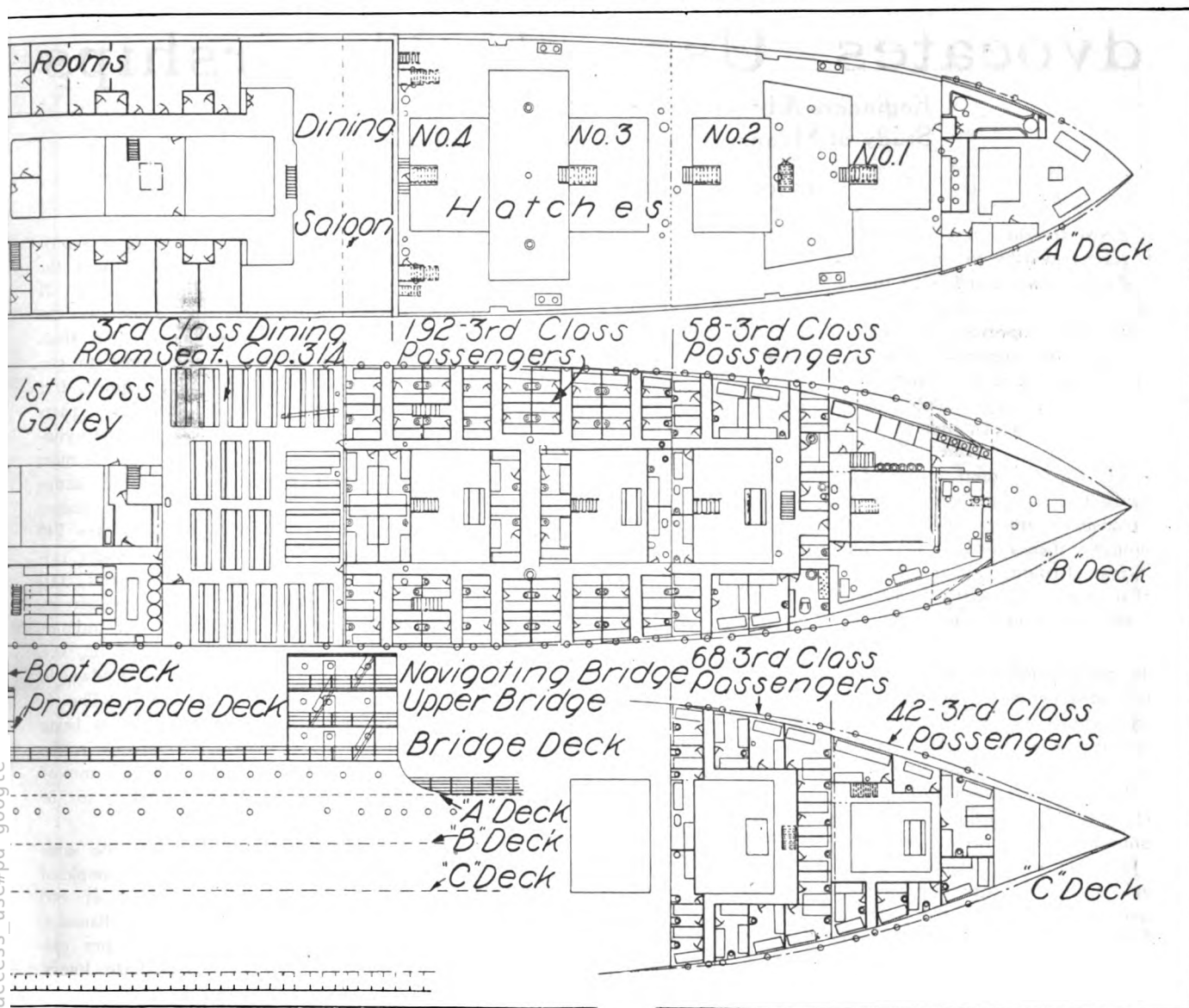
The OLD NORTH STATE and the PANHANDLE STATE, which have been operat-

ed in the north Atlantic trade by the U. S. Mail line, will be diverted to the Ward line for the Spanish run. These ships originally had no steerage accommodations and the expense of converting them to the open accommodation type will be comparatively simple. To replace the two ships, the shipping board has decided to take two of the newer 502's and fit them up for the U. S. Mail line to operate in the New York to London run. The two newer ships, the CENTENNIAL STATE and the BLUE HEN STATE, will have enclosed steerage accommodations for 602 passengers, in addition to the usual complement of first-class staterooms.

Conversion of the newer boats will be a simpler matter than if the PANHANDLE STATE and the OLD NORTH STATE were so reconverted. It was for

this reason that the shift in allocation was made. The CENTENNIAL STATE has already been delivered by her builders and the vessel brought to New York and placed in Robins' drydock to be fitted with the enclosed accommodations for steerage passengers. The work will be confined entirely to B and C decks. The BLUE HEN STATE will be similarly fitted.

On the bridge deck will be the veranda cafe and first-class stateroom accommodations. The first-class dining saloon, officers' quarters and the remaining first-class staterooms will be found on A deck. Crew quarters and the third-class dining saloon will occupy the midship section of B deck. A third class social hall will be placed forward on this same deck, and the remaining space will be devoted to steerage accom-



TTED TO ACCOMMODATE THIRD CLASS PASSENGERS. SHE WILL RUN IN THE SPANISH-CUBAN ROUTE

o Have Third Class Accommodations

modations. The third-class accommodations will be the last word in luxury for the immigrant traffic. All the space will be divided into compartments which will accommodate from two to six passengers. On B deck such compartments will be sufficient in number to transport 492 passengers. On C deck forward will be further space divided into compartments for 110 more third-class passengers. The third-class passengers will have a separate galley and space has been assigned them for a pantry and bar as well.

This rearrangement of the new passenger vessels will, it is believed, greatly increase the revenues from their services. By adding the third-class accommodations, practically one deck has been withdrawn from cargo accommodation. There still remains adequate car-

go space in the hold and practically the whole of C deck. Of all grades of the passenger business at the present time, the third-class is reputed to be the most profitable. The change will offset any losses which are sustained by reason of the expensive first-class service which must be given cabin passengers.

Plans for the third-class accommodations on the PANHANDLE STATE and the OLD NORTH STATE for the Spanish run are now being drawn. This work of reconversion, however, will not begin until the CENTENNIAL STATE and the BLUE HEN STATE are ready to start in the New York to London service.

A large colored map of the world, arranged for wall display, is being distributed by the Asiatic Petroleum Co., Ltd., London, England, with of-

fices at 233 Broadway, New York. The map shows the stations throughout the world where the company supplies diesel oil and fuel oil.

A new record in transpacific passenger service has been established by the Pacific Mail steamer GOLDEN STATE which entered San Francisco bay 13 days 7 hours and 48 minutes after leaving Yokohama, exclusive of the time passed at Honolulu. Her average speed during the return trip was 16.62 knots an hour. The fastest proportionate run was from Yokohama to Honolulu, the total time being 8 days 9 hours and 37 minutes, with an average speed of 17.7 knots. Sailing from Honolulu, her steaming time was 4 days and 23 hours, a record equaled only by that of the GREAT NORTHERN, which completed it 18 hours under the GOLDEN STATE.

Advocates Use of Motorships

Engineers Advance Merits of Such Craft and Urge
Study of Means to Develop American Motor Fleet

BY JOHN F. METTEN AND J. C. SHAW

OCEAN freight rates reduced in recent months to prewar levels should bring forcibly to the attention of American shipowners the great economic importance of the internal-combustion engine for ship propulsion, although it is not claimed that the diesel engine is a complete remedy for the present predicament of the American merchant marine. The situation in which American shipping now finds itself is analogous to the early transition from sail to steam. This country then failed to keep pace with Great Britain, which gained a lead that was only partly overcome due to the condition brought about by the late war.

In the recent shipbuilding emergency, efficiency of type was subordinated to the expediency of rapid construction and quantity production. Many warnings were sounded to those in authority at the time in regard to the danger of entirely ignoring the larger motorship in the emergency construction. However, this defect in building could have been greatly remedied by recasting the uncompleted program immediately after the armistice, as carried out by other countries, to meet the inevitable competitive conditions of peace.

Contrasted with our past policy in reference to motorships is that of Great Britain and Scandinavian countries, in particular, which fostered the motorship during the war, and, since the armistice two and a half years ago, have rapidly built motorships almost to the exclusion of the less efficient steam cargo vessels. As matters now stand we find ourselves in the possession of a large government owned fleet, almost wholly steam driven, which private owners are reluctant to purchase or operate. The question accordingly is presented to us, as naval architects and marine engineers, as to the best method by which the inadequacy of the situation can be met, whether to advocate the conversion of the most efficient of the existing steam vessels to diesel drive or build new motorships, and the best

systems which are to be recommended.

It hardly is necessary to state in detail the particular advantages of the motorship over the steamer which are fairly well conceded and undoubtedly well known. More in regard to detail of the application of the internal combustion engine, pointing out the various advantages and the defects of the different systems, will be attempted to be presented. A critical analysis of two vessels of a given size, propelled by steam turbines and diesel engines, to show the economic importance of the latter, is given in the accompanying table. It is to be hoped the authors will be pardoned if undue reference is made to Burmeister & Wain, Copenhagen, with whose work they are mostly familiar. As commonly recognized, this pioneer company has been mostly responsible for the present accepted high standing of the motorship. There have been completed 67 vessels to their own system representing 580,000 tons deadweight and 214,000 diesel indicated horsepower, totaling more tonnage than all the other makers combined for this class of vessel.

Others Have Developed Motors

Of other continental builders who have done much also to promote development of the motorship with their respective designs may be mentioned Werkspoor, Sulzer, Ansaldo San Gorgio, Krupp, Polar Diesel and Vickers of England.

Burmeister & Wain, like Werkspoor, have always held to the 4-cycle engine as best suited to this class of service, where utmost reliability combined with economy is of first consideration. Their epoch making first vessel, the *SELANDIA*, was put into service in February, 1912, being 7400 tons deadweight, having twin screws, and designed for 10½ knots. The two main engines, which have eight cylinders each, develop 2500 total indicated horsepower when running at 140 revolutions per minute. This vessel, now entering her tenth year, with a total mileage of nearly 500,000, has proved the same unqualified success as her successors and is today in steady service in the Far Eastern trade, while hundreds of steamships completed eight years later are laid up on account of

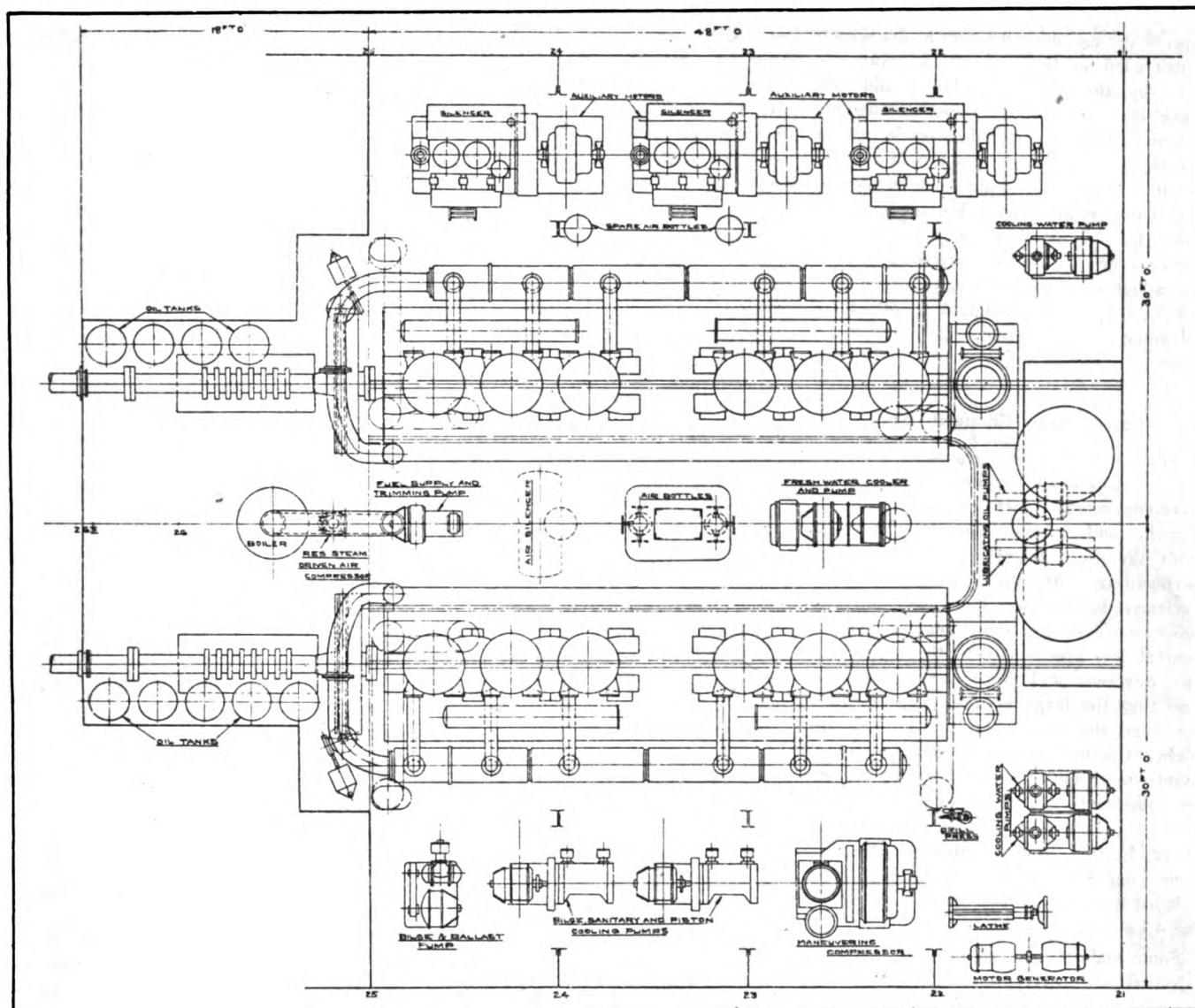
their greatly inferior operating economy. Eight cylinders were used to limit the diameter to 530 millimeters, or 21 inches, which was the same as the firm's largest land engine at that time. Later the number was changed to six, which is cheaper to build, requires less engine-room length and has fewer parts to take care of. The size of the cylinders was increased by degrees to meet the power requirements of the larger vessels employed. The largest cylinders so far built by this company are 740 millimeters which in six and eight cylinders give respectively 4500 and 6000 indicated horsepower for two screws, turning at 115 revolutions per minute, and suitable for cargo vessels of, say, from 11,000 to 14,000 tons deadweight and 12 to 12½ knots speed. The 6-cylinder engine is the same as is being installed by the Cramp company in the United States shipping board's motorship *WILLIAM PENN*, shortly to be placed in service.

It might be mentioned that the same Danish builder has drawings completed for engines having cylinders of 800 millimeters or 3½ inches in diameter, and 500 indicated horsepower per cylinder adaptable to intermediate liners.

As with the steam engine, there is a limit in size of cylinder for a diesel engine, and it would appear that the 31½-inch is nearing this limit, due principally to liner thickness required. Considerations of convenience for handling the parts on board vessel are also involved. It would seem that the next logical step with the 4-cycle engine for increasing the power to more than 500 indicated horsepower per cylinder is to resort to the double acting piston. From the standpoint of elimination of heat troubles, the condition is believed to be more favorable for the double acting 4-cycle engine than for the single acting 2-cycle engine, as the maximum temperature at the first part of the power strokes is alternately distributed to the two ends instead of continually to one end of the cylinder as with the 2-cycle.

The adaptability of the motorship in having its auxiliaries electrically driven and the advantages resulting were at the beginning recognized and incorporated in the first vessel. As the internal combustion engine by nature requires an external source of power for starting and

From a paper presented before the Society of Naval Architects and Marine Engineers in New York, May 26. Mr. Metten is chief engineer of the William Cramp & Sons' Ship & Engine Building Co., Philadelphia.



ARRANGEMENT OF MACHINERY OF MOTORSHIP WILLIAM PENN

maneuvering, the same power can effectively be used for other purposes as for driving pumps in engine room and deck machinery. The saving in fuel thus made, being about one-tenth that of a steam vessel when in port, it should be observed, is due primarily to the efficiency of the diesel engines driving generators and not so much to the electrical transmission as some have been led to assume.

In the earlier installations two large auxiliary engines were used, each driving a generator and compressor in tandem, the latter being uncoupled when in port. This was soon replaced by three, and now, as in some of the larger vessels, by four, small sets having generators only. The compressors on the main engines at the same time were changed from single high stage compressors, taking their air from the maneuvering air system to independent 3-stage compressors. For the two low pressure air compressors, one of which was always operated at sea, was sub-

stituted one motor driven compressor for maneuvering compressors only. This latter arrangement is better in that the high and low pressure air systems are not interdependent and the auxiliary power plant is more flexible. From an operating standpoint it is also better, as, by having more than two sets and being small in size, they can be overhauled in turn at sea, relieving the work of the engineers' personnel in port, whose time should then be given to more important port duties.

There has been much discussion as to whether the 2 or 4-cycle engine is better. Judged in the light of the number of motorships in successful operation, at present the 4-cycle has the decided advantage. The special claims made for the 2-cycle engine is that more power can be obtained per cubic space of cylinder, from having double the power strokes of a 4-cycle, and hence less weight and space occupied; also that the 2-cycle, having no exhaust valves to cause trouble, can burn

the lower grade oils of high sulphur content.

The 4-cycle advocates dispute these claims by saying that the 2-cycle engine cannot run with as high mean pressures in the cylinders as the 4-cycle if internal heat troubles are to be avoided, and that the combustion is not apt to be as complete as in the 4-cycle. They also point out the lower mechanical efficiency, resulting from negative work required for scavenging, and hence higher fuel consumption. With the rings passing across the open ports wearing conditions are not so good as with the unbroken liner surface of the 4-cycle, and the cylinder lubricating oil consumption is much higher than the 4-cycle due principally to the oil being scraped into these ports and blown out through the exhaust. It is also stated that with the long pistons required, scoring is apt to result from misalignment caused from wear at crossheads and guides. The 2-cycle originally dominated the field of the light high speed submarine engine,

but after some 10 years have been spent in its development it has been superseded in this field to a great extent by the 4-cycle. This would not have been possible if there is any inherent advantage in the 2-cycle as to weight for a given output. Moreover, in the long trade routes, which is the merchant motorship's chosen field, it must be obvious that the conceded superior economy of the 4-cycle will give an advantage in deadweight cargo capacity more than sufficient to offset the advantage in weight of machinery claimed, but not yet proved, by the 2-cycle advocates.

Some Have Changed Back

Some makers, who originally built 4-cycle engines and changed to 2-cycle, have in recent years changed back to 4-cycle, and others, who have always built the 4-cycle, are known to be experimenting with the 2-cycle. All experienced builders are fairly well agreed, however, that the diesel engine works best at low speeds due to the nature of the injection and burning of the oil, and that the large cylinder engines better burn the lower grade oils. Oil of higher sulphur content, though, as commonly used under boilers, is not to be recommended, as the sulphuric acid formed in the burning not only affects adversely the exhaust valves of the 4-cycle engine but attacks impartially the exhaust pipes and other parts of either the 4 or 2-cycle.

Some makers have advocated the solid injection or injection of the fuel by pressure alone, with which Vickers has been most successful. The chief difficulties encountered with such a system are in getting good combustion at all running speeds and loads and the elimination of the shock in the cylinder, which is apt to occur with the sudden rise in pressure when fuel is injected. The advantage claimed is that compressor troubles are entirely eliminated with a correspondingly higher mechanical efficiency obtained than with air injection. The fuel consumption, often erratic, however, under the most favorable conditions, is no better than the air injection full diesel. It also is questioned if an oil pressure from 2500 to 4000 pounds per square inch is more to be preferred than an air compressor and its corresponding air system having a pressure of 850 to 900 pounds.

The diesel electric drive has been suggested by some, using direct current supplied by several high speed engine sets working in series. The sponsors of this system apparently have either taken their cue from the turbine electric drive or are more familiar with the

electric end than the shortcomings of the high speed diesel engines. To reduce the weight of the engines and space occupied sufficiently to compensate for the additional electrical equipment involved, the engines must necessarily be high speed and of the trunk piston type. The engines would correspond in design to that halfway between land and submarine practice.

The disadvantages of such a system compared with the direct drive are as follows:

1. Loss in reliability in the prime movers.

2. More major overhauls, as lifting of cylinder covers and drawing of pistons, due to poorer combustion and passage of lubricating oil from crankcase.

3. About 30 per cent more fuel per knot, 15 per cent chargeable to higher fuel consumption of engines and at least 15 per cent electrical losses with the small size generators used.

4. Lighter grade and more expensive fuel oil required.

5. Much higher lubricating oil consumption associated with high speed and trunk pistons.

6. Possible vibration troubles associated with high revolutions.

7. Necessity for using objectionably large motors of the commutator type for transmissions of power from engines to propellers.

8. Greater complication of controls and more expert knowledge required of the engineer personnel.

9. Tendency to overwork the personnel with the frequent overhauls required with high speed engines when operated continuously at full power.

10. Danger of short circuits.

11. Short life of high speed engines compared with slow speed engines.

12. Higher first cost and maintenance charges.

With the higher consumption of fuel and lubricating oil per indicated horsepower combined with the electrical losses involved and the better quality of fuel oil required, the total expenditure for these items will be about 50 per cent more than with the direct drive system.

The diesel electrical system has been specially recommended for converting existing steamers. It is believed by the authors this can be far better accomplished by using a long stroke engine turning at the low revolutions required. Work has been done along these lines by Doxford and Cammell-

Laird, using the doubled opposed piston, and also Burmeister & Wain have developed a line of long stroke engines, with a stroke bore ratio of two to one, specially adapted to single-screw vessels. These latter engines are to be recommended for new vessels, as well, of 5000 tons deadweight and less, on account of less engine room personnel required, important in small vessels, and the dispensing with one shaft alley, which is also important in this size ship.

For new motorship construction, over 5000 tons deadweight two screws are to be recommended. In smaller vessels there is little difference in propulsive efficiency between single and twin screws. For larger ships, however, the efficiency is more favorable with the 2-shaft arrangement due to well known conditions affecting propeller performance, including the better immersion of the two smaller propellers under all conditions of draft. In the larger vessels, also, the saving in space by having only one shaft alley is not so important, and the length of engine room will be less with the higher speed standard stroke engines.

The table shows the estimated increased earning capacity of a motorship over a corresponding oil burning steamer as can be anticipated in actual service. The size of vessel chosen has the same general dimensions as the motorship *AFRIKA*, owned by the East Asiatic Co., and which is similar to the *WILLIAM PENN* and the two motorships building for the United American lines. The steamer is single screw with double reduction gearing and compound turbines and Scotch boilers. The revolutions for the vessel is taken at 70, which is conservative practice, to favor propulsive efficiency which for convenience here is assumed the same as the twin screw vessel.

Comparison of Vessels

The ships are of the awning deck type having a nominal deadweight carrying capacity of 13,000 tons when loaded to 31 feet 5 inches draft. They are 445 feet between perpendiculars, 60 feet beam and 42 feet molded depth, with a block coefficient of 0.782. The shaft horsepower of the turbines is taken as 3500 which is equivalent to the 4500 indicated horsepower of the diesel engines. The cost of the vessels to build, based on probable cost of labor and material in the immediate future, is assumed \$150 per ton for the steamer and \$165 for the motorship. The \$200,000 additional cost of machinery for the motorship, including deck machinery, is considered fair

Estimated Performance of Large Steamship and Motorship on Overseas Route

	STEAMSHIP	MOTORSHIP
Displacement, tons	18,690	18,730
Gross tonnage, tons	9,050	9,050
Actual mean sea speed, knots	11.5	11.5
Revolutions per minute	70	115
Indicated horsepower		4,500
Shaft horsepower	3,500	
Total weight machinery, tons	690	911
Water in system, tons	115	14
Weight deck machinery, tons	140	155
Weight of hull, fittings, equipment, etc., tons	4,575	4,600
Light displacement, tons	5,520	5,680
Capacity deadweight, tons ..	13,170	13,050
Capacity (bales) cubic feet ..	590,000	620,000
Oil bunker capacity, tons (double bottoms)	1,320	1,350
Oil bunker capacity, tons (tank between tunnels)		120
Oil bunker capacity, tons (settling tanks)	80	20
Total oil bunker cap., tons...	1,400	1,490
Oil consumption per shaft horsepower, main engines, all purposes, pounds	0.95	
Oil consumption per indicated horsepower, main engines, all purposes, pounds		0.31
Oil consumption per day at sea, tons	35.65	14.95
Oil consumption per day in port, tons	5.5	.7
Number of days at sea, per annum	220	220
Number of days in port, per annum	145	145

15,500-Knot Voyage

Days at sea	55.5	55.5
Days in port	36.5	36.5
Total oil consumption at sea, tons	1,980	830
Total oil consumption in port, tons	200	26
Reserve oil bunker (for about six days), tons	220	90
Total oil carried outbound, tons	1,400	946
Total oil burned on trip out, tons	1,090	428
Total oil necessary, homebound, tons	1,310	518
Oil to purchase abroad, tons ..	1,000	0
Weight crew and stores, tons ..	50	50
Fresh water on board at start of each leg, tons	300	75
Total weight of vessel, including fuel, water, etc., outbound, tons	7,270	6,751
Total weight of vessel, including fuel, water, etc., homebound, tons	7,180	6,323
Cargo capacity, outbound, tons	11,420	11,979

Cargo capacity, homebound, tons	11,510	12,407
Cargo capacity, average (two ways), tons	11,465	12,193

Cost of Operation Per Voyage

Insurance (4 per cent); depreciation (5 per cent), 92 days	\$44,200	\$48,800
Brokerage, at \$0.15 per ton cargo capacity	3,440	3,660
Overhead and general expenses at \$20 per gross ton, per annum	45,600	45,600
Fuel oil	45,900	15,260
Water, at \$1 per ton	600	150
Deck officers, crew, stewards	12,200	12,200
Engineer personnel	9,300	7,600
General stores, deck, engineers and stewards	5,000	5,000

Totals	\$166,240	\$138,270
Loading and discharging of deadweight tons at \$1 per ton and 75 per cent of cargo capacity	\$17,200	\$18,280

Total cost for deadweight cargo (per voyage)	\$183,440	\$156,550
Loading and discharging of bulk cargo at \$2 per 100 cubic feet at 75 per cent capacity	\$17,700	\$18,600

Total operating cost for bulk cargo (per voyage) ..	\$183,940	\$156,870
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Comparison of Earnings Carrying Deadweight Cargo

Tons per voyage outbound at 75 per cent capacity	8,580	8,980
Tons per voyage homebound at 75 per cent capacity	8,640	9,300
Rate per ton	\$13.50	\$13.50
Gross revenue per voyage at 75 per cent	\$232,500	\$246,780
Cost of operation per voyage ..	\$183,440	\$156,550
Net revenue per voyage ...	\$49,060	\$90,230
Net revenue per annum	\$195,000	\$358,000
Per cent earned on investment	10	16.65

Comparison of Earnings Carrying Bulk Cargo

Cubic feet of cargo carried out and return at 75 per cent capacity	885,000	930,000
Rate per 100 cubic feet	\$27	\$27
Gross revenue for bulk cargo ..	\$239,000	\$251,100
Cost of operation per voyage ..	\$183,940	\$156,870
Net revenue per voyage	\$55,060	\$94,230
Net revenue per annum	\$218,500	\$374,000
Per cent earned on investment ..	11.2	17.4

where the diesel work is standardized.

The fuel oil consumption at sea for the steamer with 16 degrees Beume oil is taken as 0.95 pounds per shaft horsepower, all purposes, which should be realized in service with properly designed turbines and double reduction gears and co-ordination of auxiliaries. For the motorship, with oil of 22 degrees Beume, the consumption is taken as 0.31 pounds per indicated horsepower, all purposes, which is usual with motorships belonging to the East Asiatic Co. The cost of oil in American port, per recent quotations, is \$2 for fuel oil for steamer and \$2.30 for diesel oil of gravity indicated. It is necessary for the steamer to take on additional oil in a foreign port which is assumed double that in an American port.

The route chosen is from San Francisco to the Far East and return, calling, for example, at Yokohama, Hong Kong, Manila and Honolulu, with a distance of 15,500 knots. The number of days at sea and in port is taken from percentages for similar vessels operating over similar routes, and the number of days in port include that for loading and unloading, repairs and docking, holidays, etc.

The cost of personnel is based on scale of wages in effect the first part of this year with sustenance at \$1.25 per man. This is estimated with 27 for the deck officers and crew for either vessel, and for the engine room 19 and 14 men respectively for the steamer and motorship.

The freight rate for bulk cargo is estimated as \$27 per 100 cubic feet and for deadweight cargo as \$13.50 per ton which is fairly well in accordance with present rates.

It will be seen, for the particular conditions chosen, that the motorship has an increased earning capacity over the steam vessel of 66 per cent on deadweight and 55 per cent when bulk cargo is carried. In addition to the bulk cargo, there can be carried on the outbound trip 544 tons of oil, which, at \$13.50 per ton, will increase the amount earned on investment from 17.4 per cent to 18.73 per cent or 67 per cent better than the steamer.

These figures can be used as a basis for working out a comparison for any route which will vary directly with length of voyage and the size of the vessels employed.

A brief description of the motorship WILLIAM PENN will be given, as it was the first large vessel of this kind owned by the United States shipping board. The performance of this vessel in service will be of particular interest, as it

is to be operated over the same route and by the same operating company as the electrically driven ship ECLIPSE, recently put into service.

The hull, having been originally intended for a 3000 shaft horsepower single-screw turbine installation, is not exactly suitable to the diesel engine installation of 4500 indicated horsepower, or 3500 shaft horsepower. For best efficiency, due to its high block coefficient, the vessel should not be driven over 10½ to 11 knots in service. The screws have accordingly been designed for lower turns than that for which the engines were intended, so that the designed mean indicated pressure, upon which the efficiency of engines somewhat depends, will be maintained.

The WILLIAM PENN has a length between perpendiculars of 439 feet 6 inches, beam of 60 feet, depth molded to shelter deck of 36 feet 8 inches, and draft of 28 feet 4¾ inches, corresponding to 12,375 tons deadweight. The length of engine room space was maintained the same as for the steam driven sister ships. A built up column was added to tie the middle of the engine room double bottom to the shelter and bridge decks, to prevent possible synchronous vibrations being set up between the main engines and the hull's structure.

The main engines are, as previously stated, six cylinders, each of a bore and stroke of 740 millimeters and 1150 millimeters, respectively. Along the port side are arranged the three auxiliary engines each driving 65 kilowatt generators, and along the starboard side the maneuvering compressor and bilge and ballast pumps. The lubricating and salt water cooling pumps are placed near the forward bulkhead and the fuel oil pump and reserve air compressor aft, between the main engines. In this vessel a freshwater closed cooling system, with cooler and freshwater pump, has been added for the cooling of the cylinders and covers. This is a precaution against mud being deposited in the spaces, which is liable to occur with deep draft vessels when navigating shallow waters and rivers. The salt cooling water is maintained for the main compressors and piston cooling, which is also used for cooling the fresh water.

HARRY B. EATON, of the foreign department of the Pacific Steamship Co., Seattle, has been transferred to the company's San Francisco office succeeding Lawrence O'Connell, resigned. Mr. Eaton will be assistant general agent at San Francisco, aiding M. F. Cropley, general agent.

Book Review

Export Packing, by C. C. Martin; 723 pages, 6 x 9 inches; cloth; published by the Johnston Export Publishing Co.; for sale by MARINE REVIEW, \$10.

The author of this book admits he is really the editor, explaining that most of the chapters were contributed by men in practical touch with export packing. Three of the chapters are signed by the respective authors. The book itself, however, should be of interest to every manufacturer exporting his own products and to every exporter. The book has more than 350 illustrations, some of which are drawings, showing packing details, dimensions, construction and methods.

Twenty six chapters are devoted to as many subjects. These include construction of boxes, crates and bales, written by H. N. Knowlton, boxing and packing specialist, General Electric Co., formerly captain in the packing service of the army ordnance bureau; practical notes on export shipping, by M. C. Fitzgerald, manager of transportation, the General Electric Co.; baling versus casing, by David T. Abercombie, president of the Abercombie Corp., New York, engaged in packing for export, formerly chief of packing service branch under the director of storage, war department; specifications and instructions; climate and port facilities affecting manner of packing; pilfering; customs regulations as affecting packing; packing automobiles, motor cars, machinery, agricultural machinery, hardware, tools, automobile accessories; glass, glassware and fragile goods; textiles and apparel; furniture; tinned goods; goods in cartons, barrels, bags, bundles, without packing, drums and carboys, bulky articles; parcel post; what export merchants say about packing; etc.

Each chapter is subdivided into various subjects, every three or four paragraphs, adding to the practicability of the book by affording a speedy method of finding desired information in thumbing through a given chapter.

Ships Use More Fuel Oil

Fuel oil consumption by American naval and merchant vessels in 1920 aggregated 44,487,319 barrels as compared with 27,102,616 barrels in 1919. This gain of 64.1 per cent was due to an increase in consumption by merchant ships from 18,188,974 barrels in 1919 to 38,436,300 barrels in 1920, an advance of 111.3 per cent. The navy's requirements fell from 8,913,642 barrels, used in 1919, to 6,051,019 barrels last year, a decrease of 32.1 per cent. The bulk of this oil, according to the American Petroleum institute, was delivered to vessels at Atlantic ports.

Causes and Paths of Cyclones

Analysis of Atmospheric Conditions Which Produce and Control Great Storms—Hints to Navigators

WINDS are produced by differences in atmospheric pressure in adjacent localities. These pressure differences are due principally to differences in temperature. In general, air, like water or any other fluid, if unrestrained, will flow from a region of higher pressure towards one of lower pressure. It is this property, modified by the rotation of the earth and various local influences, which causes the periodical winds of the world and also the great cyclonic storms which rise in the tropics.

The earth is surrounded by an envelope or sea of air variously estimated at from 50 to 200 miles in depth. This sea of air partakes of the movement of the earth and also is influenced so as to cause atmospheric tides somewhat similar to the tides which occur in the oceans.

The effect of these tides is shown in the diurnal movement of the barometer. This movement is very marked and regular in the tropics, becoming less so in higher latitudes. There are two periods each day of high barometer, occurring about 10 a. m. and 10 p. m., and two corresponding periods of low barometer at 4 a. m. and 4 p. m. From 4 to 10, morning and evening, the barometer is rising; from 10 to 4, day or night, it falls. The range of the diurnal oscillation is greatest at the equator, where it amounts to one-tenth (0.10) of an inch. Any marked disturbance of the regularity of this movement of the mercury will, in the tropics, indicate a change of weather. In

higher latitudes, where the diurnal movement is not so marked and local influences may predominate, the barometer is not so sure a guide. In summer, in middle latitudes, the diurnal movement is more marked than in winter.

In addition to the diurnal oscillation the barometer has other regular variations, but as these extend over long periods of time they are of theoretical rather than practical value to the mariner.

Normal Distribution of Pressure

The results of a large number of barometric observations under normal conditions show that the earth is girdled in each hemisphere by a belt or ridge of higher atmospheric pressure. In the northern hemisphere this ridge lies approximately along latitude 35 degrees. In the southern hemisphere it is about latitude 30 degrees.

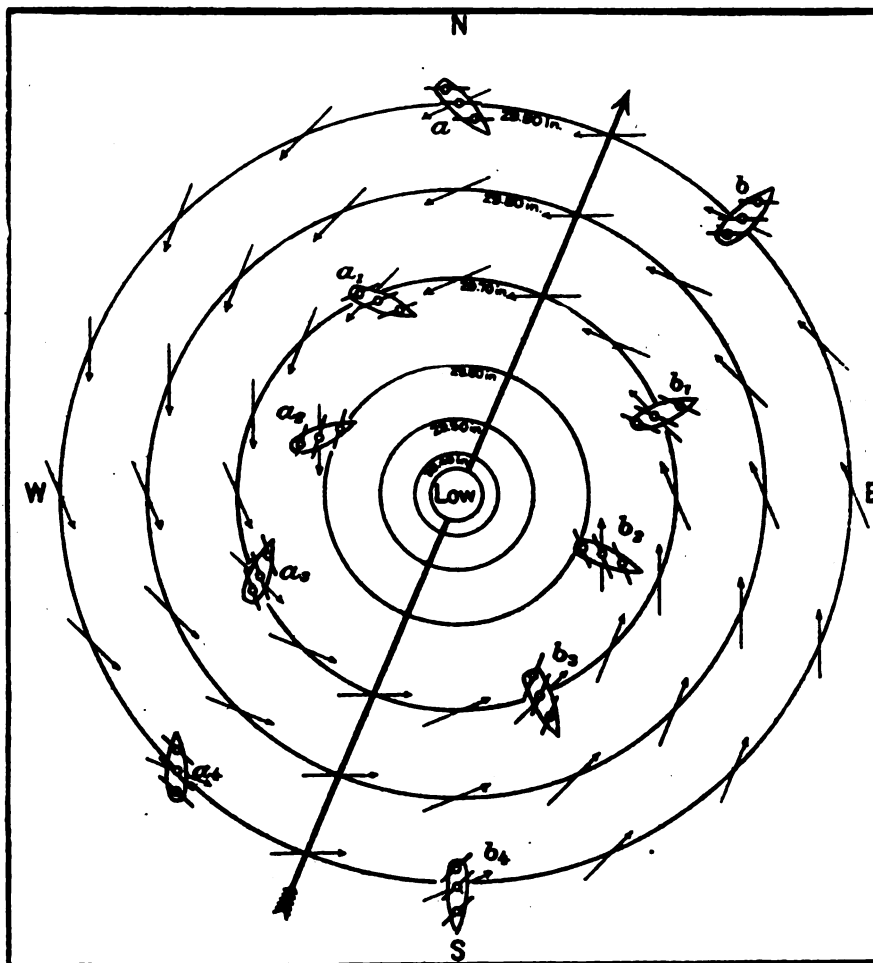
From the summit of each of these

ridges the pressure falls off alike toward the equator and the poles, although much less rapidly in the former direction than in the latter. The pressures are also somewhat unequally distributed in the two hemispheres due largely to the unequal distribution of the land in the north and south.

As a result of the above distribution of pressure, there is in both hemispheres a continual motion of the surface air away from the ridge of high pressure towards the equator on one side and toward the poles on the other, the first constituting in each case the trade winds and the second the prevailing winds of high latitudes.

Upon a stationary earth the direction of this motion would be immediately from the region of high toward the region of low barometric pressure. Where the change from high to low pressure occurred quickly the air would move rapidly and blow with the force

of a gale; where the change was gradual the air would move itself gradually and gentle breezes would result. The earth, however, is in rapid rotation, and this rotation exercises a material influence over the winds which are set in motion by the differences in pressure. Points on the surface of the earth near the poles have a less rapid linear or circumferential velocity than points situated nearer the equator. Air, therefore, which leaves a position in a higher latitude having the velocity of the earth at that point and flows toward the equator where the earth's surface has a greater linear velocity, is ap-



MOVEMENT OF SHIPS THROUGH STORM AREA

From information supplied by the U. S. hydrographic service.

parently left behind by the more rapidly moving earth as it turns from west to east and the wind draws accordingly more and more from the east to the west, forming the northeast trades in north latitudes and the southeast trades in the south latitude. Similarly, the air which starts from the region of high pressure in middle latitudes and moves toward the poles, is starting with the linear velocity of the earth from west to east in those latitudes and moving toward a region where the velocity of the earth's surface is continually growing less, thus making the wind blow more and more from the westward in each hemisphere.

This is the general circulation of the winds on the surface of the earth, from east to west in the tropics, both north and south of the equator, and from west to east in high latitudes. This general circulation may be and frequently is in-

In the North Pacific, the Philippine islands are located directly in the path of the cyclonic storms which occur there. They appear to originate at sea somewhere in the neighborhood of Guam and usually cross the Philippines north of latitude 10 degrees N. before recurving to the northward.

In the South Pacific, the details of cyclonic storms are not so well known, due to the scarcity of observing stations in these waters. Samoa, Fiji, and the Tonga islands are, however, directly in the path of the majority of these storms.

The storms of the Indian ocean have several peculiarities which distinguish them from other cyclonic storms and appear to occur with the greatest frequency in the neighborhood of Mauritius.

In the earlier stage of its existence, the motion of the storm center has in

majority of these whirls are in all likelihood promptly dissipated. Under favorable conditions, however, one may survive, and in such event is borne along to the westward by the general movement of the atmosphere in the tropics very much as an eddy is borne along by the current of a river.

Fully developed, the storm consists of a well defined area, more or less circular in shape, throughout which the atmospheric pressure diminishes rapidly on all sides toward the center or point of lowest barometer, the rate of this diminution amounting in the case of severe storms to 0.01 or even 0.02 of an inch for each mile of approach. Within this area, on the sides, as it were, of the barometric depression, the winds blow with full hurricane force, the velocity of the moving air increasing with the steepness of the barometric slope, the direction, however, being not toward but *around* the center, the motion of the air suggesting very forcibly, on a gigantic scale, the familiar path followed by water in escaping from a circular basin by a central opening in the bottom. At the center itself—the point of lowest pressure—is a region not more than 10 or 15 miles in diameter throughout which comparative calm prevails. Here, too, the dense canopy of cloud which overhangs the storm area is at times pierced, forming the so-called "eye of the storm." The seas within this area are, however, violent and confused, sweeping in from all sides with overwhelming violence.

In the tropics the motion of the storm center as well as being to the westward is away from the equator. In order to fix in one's mind the direction of rotation of the winds in both hemispheres, a storm may be considered as a large wheel lying flat on the earth and rolling along the equator to the westward.

As the center draws away from the equator until the limit of the trades is reached the path of the storm ordinarily, but not always, recurves and turns eastward and toward the pole. When this occurs the storm loses the characteristics peculiar to tropical cyclonic storms.

The occurrence of tropical cyclonic storms is confined to the summer and autumn months of the respective hemispheres and to the western parts of the several oceans—the North Atlantic, North Pacific, South Pacific, and Indian oceans. They are unknown in the South Atlantic. The Arabian sea and Bay of Bengal are also visited by cyclonic storms, which occur most frequently in May and October.

In the Atlantic, the occurrence of these storms is confined almost exclusively to the period June—November, attaining a maximum frequency in September and October. The number actually

OCCURRENCES OF WEST INDIA HURRICANES

	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	Total
June.....	0	0	1	0	0	0	0	0	0	0	0	1
July.....	0	2	0	0	0	0	0	0	0	0	0	2
August.....	1	1	1	4	0	0	0	0	0	1	0	8
September.....	2	2	1	0	2	1	3	1	3	2	2	19
October.....	1	3	4	2	3	1	1	2	0	4	1	22
November.....	2	0	1	1	0	0	0	0	0	0	0	4

FREQUENCY OF TYPHOONS IN NORTH PACIFIC

Class.	Frequency.	Period.
	<i>Per cent.</i>	
I.Aa	10	Middle of June to end of September.
I.Ab	12	Middle of July to middle of October.
Ib	0	Late in the year.
Ic	4	June to the end of September.
Id	2	May to September, inclusive.
II.A	2	July, August, and September.
IIb	7	August and September.
IIc	3	June to September. Maximum in July.
IId	4	July and August.
IIIa	1½	October and November.
IIIb	1	October.
IIIc	4	July, August, and September.
IIId	15	June to October. Most frequent in August and September.
IIIE	12½	May to December.
IV.Aa	8½	May to December. Rare in August.
IVab	3	Beginning and end of typhoon season.
IVb	4½	September 1 to December 1. Most common in November.
IVc	4	Beginning and end of typhoon season. Most frequent in May.
IVd	1	April and December.

terfered with by local conditions, particularly in the northern hemisphere.

If at any point in the above-described system of air circulation there occurs a local area of low pressure the air from the surrounding region of high pressure is forced inward toward the center with a velocity depending upon the rapidity of the change from high to low pressure.

This inward flow is converted by the rotation of the earth in the manner explained above into an atmospheric whirl around which the winds circulate, turning to the left or against the sun in the northern hemisphere and in the opposite direction in the southern hemisphere.

The tropical cyclone storm of the North Atlantic is known under the name "West India hurricane," from the fact that its effects most frequently are experienced in that particular re-

gion a certain amount of westing, due to the general westward drift of the atmosphere throughout the low latitudes in which the storm originates. The area throughout which this occurs in the Atlantic covers the Caribbean sea and the region to the eastward of the Windward islands. Here, owing to the high temperature and the excessive humidity of the air, combined with the frequency of calms, the atmospheric equilibrium is unstable, and uprising columns of warm air are apt to be frequent, the place of ascending heated and more humid air being taken by the cooler and drier surrounding air, which flows inward from all sides to restore the disturbed equilibrium. A system of air currents is thus established, all directed radially inward. When not closer than 5 or 8 degrees to the equator such a system of currents is converted into an atmospheric whirl. The ma-

occurring is probably somewhat greater than the number recorded. The limited area of the storm within the tropics (the diameter of the area of violent winds is here frequently less than 100 miles) and the scarcity of observing vessels in the region throughout which the storms manifest their greatest activity make it probable that a considerable percentage escapes observation. The occurrence during the 11-year period, 1890-1900, according to the records of the United States hydrographic office, was as shown in the table on the facing page.

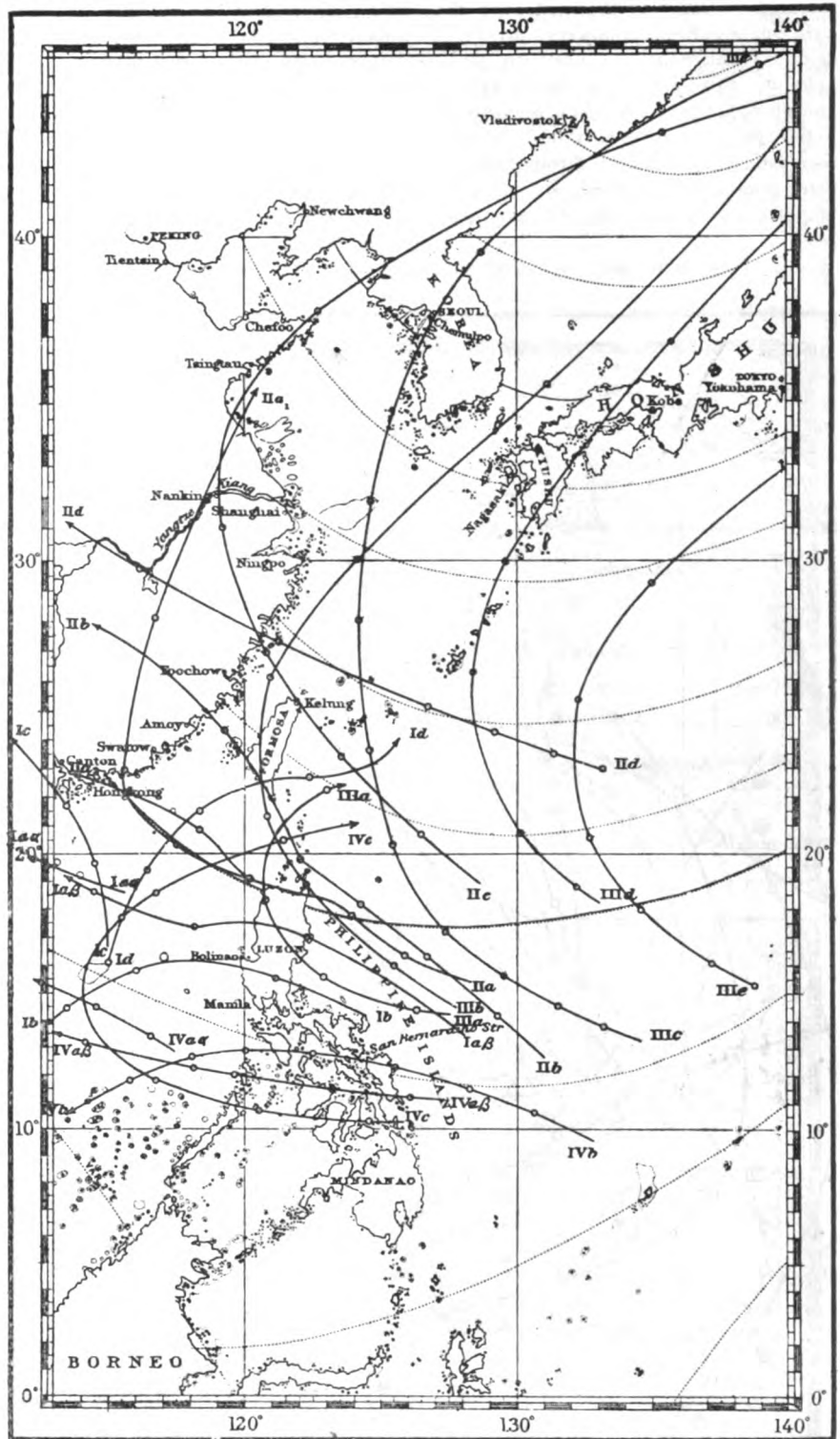
In south latitude the storm season is from September to May, February and March being the worst months. It would thus appear that in both hemispheres the storm season corresponds to the time when the sun is approaching the equator on its return from the greatest declination north or south.

During the season of tropical storms whatever interferes with the regularity of the diurnal oscillation of the barometer should be considered an indication of a change of weather. The barometer is by no means an infallible guide for warnings much in advance, but after the beginning of the storm it will more or less accurately indicate the rapidity of approach and distance from the center, and its indications should in no case be disregarded.

One of the earliest indications of the approach of a tropical storm is the appearance of the sky and general clearness of the atmosphere. Tropical cyclonic storms are almost invariably preceded by a day of unusual clearness, when distant objects not usually visible stand out with great distinctness. The temperature at such times is more than unusually oppressive.

This is frequently accompanied by an unusually high barometer. Later it may be followed by a restless oscillating or pumping of the mercury caused by the disturbed condition of the atmosphere. Then the sky becomes overcast and remains so, at first with a delicate cirrus haze, which shows no disposition to clear away at sunset, but which later becomes gradually more and more dense until the dark mass of the true hurricane cloud appears upon the horizon. From the main body of this cloud portions are detached from time to time and drift across the sky, their progress marked by squalls of rain and wind of increasing force. Rain, indeed, forms one of the most prominent features of the storm. In the outer portions it is fine and mist like, with occasional showers, these latter increasing in frequency and in copiousness. In the neighborhood of the center it falls in torrents. The rain area extends farther in advance of the storm than in the rear.

A long swell from the direction of



TRACK OF ASIATIC TYPHOONS

the storm frequently sets in before any other indications become marked.

When the sky first becomes overcast with the characteristic veil of cirrus the storm center will most probably lie in the direction of the greatest density of the cloud.

When the hurricane cloud appears over the horizon it will be densest at the storm center.

By this time the barometer will usually be showing unmistakable evidence of a fall, and one may confidently

look for a storm and begin observations to determine the location of its center and the direction in which it is moving.

Surrounding the actual storm area is a territory of large extent throughout which the barometer reads a tenth of an inch or more below the average, the pressure diminishing toward the central area, but with no such rapidity as is noted within that area itself. Throughout the outer ring unsettled weather prevails. The sky is ordinarily covered with a light haze, which in-

creases in density as the center of the storm approaches. Showers are frequent. Throughout the northern semicircle of this area (in the northern hemisphere) the wind rises to force 6 or 8—the "reinforced trades"—and is accompanied by squalls; throughout the other semicircle unsettled winds, generally from a southeasterly direction, prevail.

It is very important to determine

on the right hand. In the southern hemisphere, under the same circumstances, the center is to the left. If the wind traveled in exact circles, the center would be eight points to the right when looking directly in the wind's eye. We have seen however, that the wind follows more or less a spiral path inward, which brings the center from 8 to 12 points to the right of the direction of the wind. At the same

good average allowance to make, but a larger allowance should be made when in front of the storm center than when in its rear.

The approximate direction of the storm center is a comparatively easy matter to determine. The direction in which it is moving may be estimated with a fair degree of accuracy from the charted paths of similar storms which have been observed before. It is seen from the chart of hurricane tracks in the north Atlantic that in this region the storms follow in general a northwesterly course until between latitudes 25 degrees and 30 degrees, when they recurve and go to the eastward of north. In the north Pacific they follow the same general course on the coast of Asia, but recurve as a rule in lower latitudes than in the Atlantic.

The distance away from the storm center can only be estimated very imperfectly. The old table from Piddington's *Horn Book* may serve as a slight guide to this end, but too much reliance can not be placed upon it:

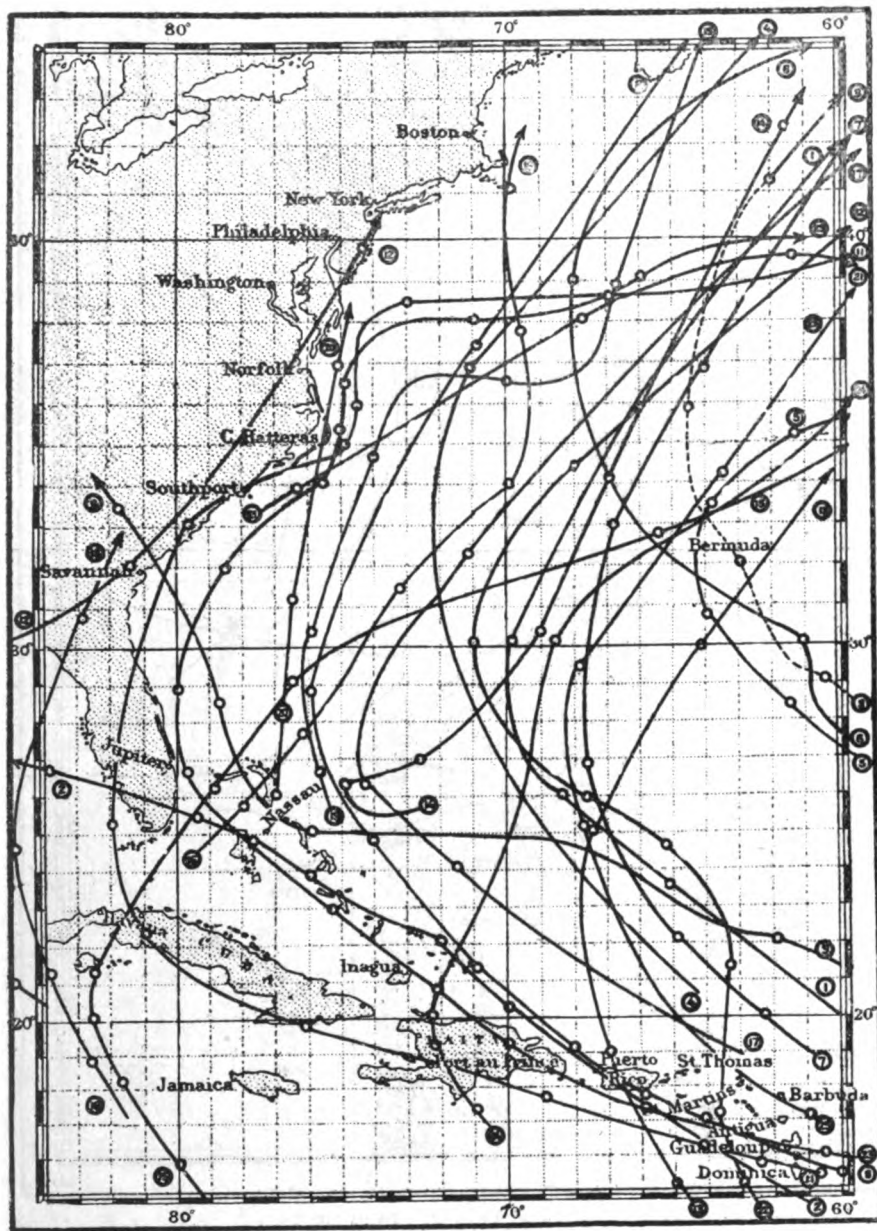
DISTANCES FROM STORM CENTER

Average fall of barometer per hour	Distance in miles from center
From 0.02 to 0.06 inch.....	From 250 to 150
From 0.06 to 0.08 inch.....	From 150 to 100
From 0.08 to 0.12 inch.....	From 100 to 80
From 0.12 to 0.15 inch.....	From 80 to 50

With storms of varying area and different intensities the lines of equal barometric pressure (isobars) must lie much closer together in some cases than in others, so that it is quite impossible to more than guess at the distance of the center by the height of the mercury or its rate of fall.

At the same time storms travel at varying rates of progression. In the tropics this ranges from 5 to 20 miles per hour, always decreasing as the storm track turns northward and recurves, increasing again as it reaches the north Atlantic, where it may amount to as much as 50 miles per hour. Within the tropics the storm area is small, the region of violent winds seldom extending more than 150 miles from the center. The barometer, however, falls rapidly as one progresses from the circumference toward the center, a difference of 2 inches having been observed in this distance.

The winds accordingly blow with greater violence and are more symmetrically disposed around the center than is the case in higher latitudes. After the storm has recurved it usually widens out and becomes less severe and its velocity of translation increases as its rotational energy grows more moderate. Its center is no longer a well defined area of small size marked by a patch of clear sky and near which the winds blow with the greatest violence. Out of the tropics, the strongest



HURRICANE TRACKS ON NORTH ATLANTIC

as early as possible the location and direction of travel of the center.

While this cannot be done with absolute accuracy with one set of observations, a sufficiently close approximation can be arrived at to enable the vessel to maneuver to the best advantage.

Since the wind circulates against the sun in the northern hemisphere the rule in that hemisphere is to face the wind and the storm center will be

time the number of points to the right may vary during the same storm, and as the wind usually shifts in squalls its direction should be taken just after a squall.

The center will bear more nearly eight points from the direction of the lower clouds than from that of the surface wind.

Ten points to the right (left in south latitude) when facing the wind is a

to the severest winds; and, when in it, it is easier to avoid the storm center. For this reason it is called the *navigable* semicircle, the right semicircle (left in south latitudes) on the other hand is called the *dangerous* semicircle.

In order to determine the path of a storm and consequently in which semi-circle the ship finds herself, it is necessary to wait until the wind shifts.

the course and distance she has traveled in the interim.

Two bearings of the center with an interval between of from two to three hours, will, in general, be sufficient to determine the course of the storm, provided an accurate account is kept of the ship's way, but if the storm be moving slowly a longer interval will be necessary.

Should the wind not shift, but continue

Washington
IN HIGH LATITUDES
Velocity along track,
20 to 30 miles per hour
Norfolk
C. Hatteras
Southport
Savannah
IN MIDDLE LATITUDES
STORM RECURVING
Velocity along track,
5 to 10 miles per hour
Jamaica
IN LOW LATITUDES
Velocity along track,
about 17 miles per hour
Puerto Rico

TYPICAL STORM PATH ON NORTH ATLANTIC

When this occurs, plot a new position of the center 10 points to the right of the new direction of the wind as before, and the line joining these two positions will be the *probable* path of the storm. If the ship has not been stationary during the time between the two sets of observations (as will indeed never be the case unless at anchor), allowance must be made for

to blow steadily with increasing force, and with a falling barometer, it may be assumed that the vessel is on or near the storm track. Owing to the slow advance of storms in the tropics a vessel might come within the disturbed area through overtaking the center. In such a case a slight decrease in speed would probably be all that would be necessary, but it should

The first two of the above determinations will locate the approximate position of the center, which should be marked on the chart. The relation between the position of the ship and the position and prospective track of the center will indicate the proper course to pursue.

Should the ship be to the westward of the storm center it may be assumed that the latter will draw nearer more or less directly. It then becomes of the utmost importance to determine its path and so learn whether the vessel is in the right or left semicircle of the storm area.

The right and left semicircles lie on the right and left hands, respectively, of an observer standing on the storm track and facing in the direction the center is moving. Owing to the difference in the direction of rotation of storms north and south of the equator that semicircle which lies between the path and the equator in both the northern and the southern hemispheres prior to the storms recurving (the left-hand semicircle in the northern hemisphere and the right-hand in the southern) is not so liable

be borne in mind that the storm path is by no means constant either in speed or direction, and that it is particularly liable to recurve away from the equator.

In the cyclones of the southern Indian ocean the best observers claim that the wind seldom, if ever, blows around the center. Instead of following the usual inward spiral path, the northeasterly and easterly winds of these storms blow almost directly toward the center, rather than around it.

Should the position of the vessel lie in advance of the storm center, the procedure to be followed will depend upon whether she is in the dangerous or navigable semicircle. The object in both cases should be to keep as far as possible from the center. Knowing the direction of rotation of storms in both hemispheres, it will be clear that points lying on the right of the storm track (right semicircle) will, as the center approaches and passes, find the wind hauling, or shifting in the direction north, east, south, west.

On the left of the track (left semicircle) the wind will shift in the reverse direction. Shifts of the wind usually come in heavy squalls, during which the wind will blow from the new direction, even though it may apparently shift back temporarily during the lull immediately following.

Barometer is Valuable Aid

It must not be forgotten that the shifts of wind will only occur in the above order when the vessel is stationary. When the course and speed are such as to maintain a constant relative bearing between the ship and storm center, there will be no shift of wind. Should the vessel be outrunning the storm, the wind will indeed shift in the opposite direction to that given, and a navigator in the right semicircle, for instance, and judging only by the shifts of wind without taking into account his own run, might imagine himself on the opposite side. In such a case the barometer must be the guide. If it falls, one is approaching the center; if it rises, one is receding.

An examination of the diagram on page 305 shows how this is. A vessel hove to at the position marked *b*, and being passed by the storm center, will occupy successive positions in regard to the center from *b* to *b4*, and will experience shifts of wind, as shown by the arrows, from east through south to southwest. On the other hand, if the storm center be stationary or moving slowly and a vessel be overtaking it along the line from *b4* to *b*, the wind will back from southwest

to east, and is likely to convey an entirely wrong impression as to the location and movement of the center.

Hence it is recommended that a vessel suspecting the approach or proximity of a cyclonic storm should stop (if a sailing ship heave-to on the starboard tack) for a while until the path of the center is located by observing the shifts of the wind and the behavior of the barometer.

If the wind remains steady in direction and increases in force in heavy squalls while the barometer falls, the vessel is probably on or near the track of the storm and in advance of the center.

In this position, with plenty of sea room, the proper course is to run with the wind well on the starboard quarter, if north of the equator, and on the port quarter if south. The vessel will thus be in the navigable semicircle and be constantly increasing her distance from the center. The wind will draw more forward as she recedes from the center, but the course first set should be adhered to until well clear.

The procedure is the same if the observations place the ship anywhere within the navigable circle.

The most critical situation is that of a vessel finding herself in the forward quadrant of the dangerous semicircle, particularly if at some distance from the center, where the wind shifts but slowly and the barometer indications are undecided.

The general object, however, of putting as much distance as possible between one's self and the storm center should be kept in view. With steamers this may not be difficult, although, should the storm be recurving, the course first set may have to be subsequently altered in order to continue to draw away. A sailing vessel will be set by the wind directly toward the path of the storm and may become involved with the center without being able to avoid it. If so caught in the dangerous semicircle, a sailing vessel should haul by the wind on the starboard tack (on the port tack in south latitude), keep coming up as the wind draws aft, and carry sail as long as the weather permits. If obliged to heave-to, do so on the starboard tack in north latitude and on the port tack in south latitude.

This maneuver, while it may not carry a vessel clear of the storm track, will make the best of a bad situation. A vessel so hove-to will find the shifts of wind drawing aft, enabling her to come up to them instead of being headed off, as would be the case on the other tack.

Moreover, since the sea changes its direction less rapidly than the wind, the vessel will come up more nearly

head-on to the old sea, instead of having it more abeam as on the opposite tack.

A general rule for heaving-to is always heave-to on whichever tack permits the shifts of wind to draw aft.

If, in spite of all endeavors, the storm center should pass directly over a vessel she will experience a short period of calm, but the seas will be high, confused and dangerous, being swept in from all directions. After a short interval the wind will burst with hurricane force from a point directly opposite to that from which it was blowing before, and the vessel must be prepared to meet it and to avoid being caught aback.

Should steamers find it necessary to heave-to the method of doing so must depend upon the position within the storm area. Many steamers find it preferable to heave-to stern to sea, with engines turning over slowly, and drive before it.

Should this course be followed in the dangerous semicircle a steamer would in all probability be running directly into the center of the storm, where the high and confused seas would be more than likely to inflict damage. When obliged to heave-to in the dangerous semicircle steamers should keep the wind a little on the starboard bow in north latitude and on the port bow in south latitude and make as much headway as the conditions will allow.

Conditions in Indian Ocean

The situation is complicated in the southern Indian ocean by the presence of the belt of intensified southeast trades to the southward of the storm tracks, in which belt the wind may increase in force with a falling barometer, while remaining steady in direction. Under such conditions there are no means of telling whether one is within the storm area proper or merely in the belt of intensified trades.

If, in the latter case, one were to heave-to there is a good chance of being caught by the storm recurving or at the best undergoing a needless loss of time. On the other hand, to run off to the northwestward may bring one directly in the path of the storm.

A rule which in practice has been found to meet the situation fairly well is as follows: If well to the eastward of Mauritius and the indications point to being either in the southwest quadrant of a storm or in the intensified trades, with no means of determining which, one should follow the regular rule and heave-to, making as much southing as possible. If, however, one is in the neighborhood of Mauritius, one should run to the northwestward and endeavor to get between that island and Madagascar, where usually better

semicircle, ~~the~~ ~~heaver~~ ~~as~~ above.

On the storm track in rear of center.—

been built with a slope that will facilitate running up on the ice.

and 10,000 tons in other countries. These additions will place the total at 4,064,534.

taking it along the line from ~~it~~ to ~~the~~ direction less rapidly than the wind, and endeavor to get between that island
the wind will back from southwest the vessel will come up more nearly and Madagascar, where usually better

weather will be found. The attempt to cross the track ahead of a storm in the Indian ocean may be made with better chance of success there than elsewhere, since the storms of this region appear to travel more slowly than in other parts of the world.

The chart represents a cyclonic storm in the northern hemisphere after recurving. For simplicity, the area of low barometer is made perfectly circular and the center is assumed to be ten points to the right of the direction of the wind at all points within the disturbed area. Let us assume that the center is advancing about NNE., in the direction of the long arrow, shown in heavy full line. The ship *a* has the wind at ENE., she is to the left of the track, or technically in the navigable semicircle. The ship *b* has the wind at ESE., and is in the dangerous semicircle. As the storm advances these ships, if lying to, *a* upon the port tack, *b* upon the starboard tack, as shown, take with regard to the storm center the successive positions *a a*, etc., *b b*, etc., the wind of ship *a* shifting to the left, of ship *b* to the right, or in both cases drawing aft, and thus diminishing the probability of either ship being struck aback, a danger to which a vessel lying to on the opposite tack, (that is, the starboard tack in the left hand semicircle or the port tack in the right hand semicircle) is constantly exposed, the wind in the latter case tending constantly to draw forward. The ship *b* is continually beaten by wind and sea toward the storm track. The ship *a* is drifted away from the track and should she be able to carry sail would soon find better weather by running off to the westward.

The rules for maneuvering may be summed up as follows:

Northern Hemisphere

Right or dangerous semicircle.—STEAMERS: Bring the wind on the starboard bow, make as much way as possible, and if obliged to heave-to do so head to the sea. SAILING VESSELS: Keep close hauled on the starboard tack, make as much way as possible, and if obliged to heave-to do so on the starboard tack.

Left or navigable semicircle.—STEAM AND SAILING VESSELS: Bring the wind on the starboard quarter, note the course and hold it. If obliged to heave-to steamers may do so stern to sea; sailing vessels on the port tack.

On the storm track in front of center.—STEAM AND SAILING VESSELS: Run for the left semicircle with wind on starboard quarter, and when in that semicircle maneuver as above.

On the storm track in rear of center.—

Avoid it by the best practicable route, having due regard for the storms recurving to the northward and eastward.

Southern Hemisphere

Left or dangerous semicircle.—STEAMERS: Bring the wind on the port bow, make as much way as possible, and if obliged to heave-to do so head to sea. SAILING VESSELS: Keep close hauled on the port tack, make as much way as possible, and if obliged to heave-to do so on the port tack.

Right or navigable semicircle.—STEAM AND SAILING VESSELS: Bring the wind on the port quarter, note the course and hold it. If obliged to heave to, steamers may do so stern to sea; sailing vessels on the starboard tack.

On the storm track, in front of center.—STEAM AND SAILING VESSELS: Run for right semicircle, with wind on port quarter, and when in that semicircle maneuver as above.

On the storm track, in rear of center.—Avoid it by the best practicable route, having due regard for the storms recurving to the southward and eastward.

The above rules depend, of course, upon having sea room. In case land interferes a vessel should heave-to, as recommended for the semicircle in which she finds herself.

One peculiarity of cyclonic storms is that one is very apt to be followed almost immediately by another, so that the mariner who has safely escaped from one center may soon find himself involved with another, which will follow almost the same track as its predecessor.

The schooner BOWDOIN, built to carry Donald M. MacMillan, the explorer, on his next Arctic voyage, starting in July, was launched recently at the shipyard of Hodgdon Bros., East Boothbay, Me. The BOWDOIN is about the size of the DISCOVERY, William Baffin's ship, which in 1616 was the first to reach Baffin Land. She is 80 feet 10 inches in length, 19 feet 7 inches beam, and 9 feet 6 inches draft, with a total displacement of 115 tons. She is of the knockabout auxiliary schooner type and equipped with a 45-horsepower crude oil burning engine. In design and construction the BOWDOIN embodies all special provisions for the work ahead of her suggested by the long experience of MacMillan, who was the chief lieutenant of Peary in his successful expedition to the North Pole. Her hull is described as eggshaped, with nothing to which ice can cling. The bow has been built with a slope that will facilitate running up on the ice.

Fire Destroys Steamer

Fire, said to have originated in the bunkers from spontaneous combustion, destroyed the new Japanese steamship TOKUYO MARU of the Toyo Kisen Kaisha fleet 40 miles off the Oregon coast May 2. Eight lives were sacrificed. The property loss totaled more than \$1,500,000.

Bound from Valparaiso for Japanese ports via San Francisco, Portland and Honolulu, the TOKUYO MARU was lost the day after she sailed from the Columbia river. The fire spread to a shipment of cotton and then to the nitrates, sulphur and lumber making a most intense blaze. So rapidly did the fire spread, that it was impossible to fight it and the passengers and crew were compelled to abandon ship within half an hour. Many were compelled to leap into the water to save themselves from the flames. The casualties were due to drowning and exposure.

The charred cotton combined with sulphur and nitrates, forming the ingredients of gunpowder and producing terrific explosions which hurled cargo high in the air and resulted in a fiery display which could be seen 40 miles away. The hull blazed for more than 24 hours and then sank. The ocean swell dipped the red hot plates of the bow into the cold waters forming masses of steam which with the clouds of smoke rolled high in the air, giving one of the most vivid pyrotechnic displays ever seen at sea.

The passengers and crew rescued were picked up by the U. S. A. T. BUFORD which at a distance of 20 miles saw the vessel in distress and hastened to her assistance.

Agents of the lost vessel assert that the fire originated in the bunkers and was undoubtedly due to spontaneous combustion. The TOKUYO MARU coaled at San Francisco.

The \$2,000,000 palatial steam yacht GUINEVERE was launched recently at the shipyard of Lawley & Son, Neponset, Mass. The GUINEVERE is a 3-mast steel auxiliary schooner, intended for round-the-world cruising. The vessel has a contract speed of 10½ miles an hour, the motors having a capacity of 750 horsepower. She will be commanded by Capt. William Duncan.

The French commercial fleet has a tonnage of 3,101,199, including 407,000 tons of enemy vessels. In 1913 the tonnage was 2,555,000 and in 1919 was 1,888,919 tons. France is building 580,200 tons in England, 373,135 in France and 10,000 tons in other countries. These additions will place the total at 4,064,534.

Directory of American Shipping

Addresses, Operating Officials, Vessel Tonnages, and Domestic and Foreign Services of Leading Steamship Companies

Alaska Steamship Co., Seattle, Wash.

Line—Alaska Steamship Co.
Operating manager—E. T. Stannard
Freight manager—John H. Bunch
Ships owned—14; net tonnage 22,287
Home port—Seattle.
Ports served in United States—Seattle and practically all Alaska coast ports.

American Ship & Commerce Navigation Corp., New York

Operating Manager—United American Lines, Inc.
Ships owned—11; net tonnage—86,025
Home port—New York
Ports served in United States—Baltimore, New Orleans, Norfolk, Philadelphia.

American Sugar Transit Corp., New York

Line—American Sugar Transit Corp.
Operating manager—P. M. Ripley
Freight manager—P. M. Ripley
Ships owned—2; net tonnage—5060
Home port—New York

American Transportation Co., New York

Operating manager—H. G. Perine
Freight manager—H. M. Lane
Ships owned—2; net tonnage—3210
Home port—New York
Ports served in United States—Tramp

Nelson Andrews, Redwood City, Cal.

Line—Bowes & Andrews
153 Steuart St., San Francisco
Operating managers—E. C. Bowes and N. Andrews
Freight managers—E. C. Bowes and N. Andrews
Ships owned—2; net tonnage—859
Home port—San Francisco.
Ports served in United States—Pacific coast lumber ports.

Atlantic Coast Transportation Co., New York City

Operating manager—J. Morecraft
Ships owned—26; net tonnage—17,888
Home port—New York
Ports served in United States—New York, Boston, Portland, Me.; Rockland, Me.; Bangor, Me.

Atlas Steamship Co., Inc. San Francisco, Cal.

Line—Atlas Steamship Co.
Operating manager—A. Humburg
Freight manager—A. Muller
Ships owned—2; net tonnage—1638
Home port—San Francisco

Ports served in United States—Seattle, Tacoma, Bellingham, San Francisco.

Baltimore & Carolina Steamship Co., Inc., Baltimore, Md.

Line—Baltimore & Carolina Steamship Co., Inc.
Operating manager—Mason L. Weemis Williams
Freight manager—Henry Williams
Ships owned—2; net tonnage—2480
Home port—Baltimore
Ports served in United States—Charleston and Georgetown, S. C.; Baltimore.

Bangor-Brewer Shipbuilding Co., Inc., Brewer, Me.

Treasurer—G. H. Hamlin
Ships owned—1.
Home port—Bangor, Me.

Barber Steamship Lines, Inc., 17 Battery Place, New York

Line—Barber Lines
Operating manager—Charles Barthold
Freight manager—John D. Meehan
Ships owned—3; net tonnage—8180
Shipping board vessels operated—25; net tons—103,909.

Trade Routes:

China, Japan and the Philippines—The Barber Line

Via Suez and Panama Canals or Cape of Good Hope to and from Aden, Singapore, Manila, Hong Kong, Shanghai, Dalny, Kobe, Yokohama and Vladivostok; transshipping to all ports in the Red sea, India, East Indies, China and Japan. Also, from Far East to United Kingdom and continent.

South and East Africa—The Union Clan Line

To any from Cape Town, Mossel bay, Algoa bay (Port Elizabeth), East London, Port Natal, Delagoa bay, Inhambane, Beira, Quillimane, Mozambique, Zanzibar, Tamatave, Mauritius and Reunion.

For Europe—The Barber Lines

To and from Havre, Bordeaux, La Pallice and Newport, Hamburg and Bremen.

South America—River Plate Service
To and from Bahia Blanca, Buenos Aires, Rosario.

Australia, New Zealand, Etc.

Via Panama canal or Cape of Good Hope—To and from Melbourne, Sydney, Fremantle, Adelaide, Brisbane, Auckland, Wellington, Lyt-

telton, Dunedin, etc.

C. A. Barbour, Houston, Tex.

Line—Companie de Navegacion, Interior S. A., Tampico, Mexico.
Operating manager—J. C. Barbour
Ships owned—3; tugs.
Operate on Panuco River, Mexico, exclusively.

Black Diamond Steamship Corp., 67 Exchange place, New York.

Line—Black Diamond Lines
Operating manager—B. A. Harnett
Freight manager—P. D. Kauffman
Ships owned—1; net tonnage—3347
Shipping board vessels operated—12; net tons—46,830
Home port—New York
Ports served in United States—New York, Baltimore and Philadelphia.

Boston & Gloucester Steamboat Co., Boston

Line—Boston & Gloucester Steamboat Co.
Operating manager—H. J. Jernegan
Freight manager—H. J. Jernegan
Ships owned—1; net tonnage—395
Home port—Boston
Ports served in United States—Boston and Gloucester, Mass.

Boston Sand & Gravel Co., Boston

Operating manager—P. P. Bird
Freight manager—S. B. Rowe
Ships owned—5.
Home port—Boston
Ports served in United States—New England.

Buehner Lumber Co., Coos Bay, Oreg.

Ships owned—1; net tonnage—465
Home port—Coos Bay, Oreg.
Ports served in United States—California ports.

Burton Steamship Co., Inc., Boston

Line—Burton Steamship Co.
Operating manager—W. H. Burton
Freight manager—W. H. Burton
Ships owned—2
Home port—Boston
Ports served in United States—Boston, Portland, Me., Castine, Stonington, Bar Harbor, Prospect Harbor, South Gouldsboro, Jonesport.

Cape Cod Steamship Co., Boston

Line—Cape Cod Steamship Co.
Operating manager—F. T. Peabody
Freight manager—F. T. Peabody
Ships owned—1; net tonnage—1746
Home port—Boston
Ports served in United States—Summer season, Boston to Provincetown, Mass.

W. R. Chamberlin, San Francisco

Line—W. R. Chamberlin & Co.
Operating manager—W. R. Chamberlin
Freight manager—E. A. Chamberlin
Ships owned—3; net tonnage—3600
Home port—San Francisco
Ports served in United States—Pacific coast

Clinchfield Navigation Co., Inc., 24

Broad Street, New York

Chairman of board—C. E. Bockus
President—C. M. Barnett
Treasurer in charge of operations—J. L. Stewart
Ships owned—7; net tonnage—17,000
Shipping board vessels operated—25; net tons—100,000
Home port—New York
Ports served in United States—Charleston, Galveston, etc.

Clyde Steamship Co., North River, N. Y.

Line—Clyde Steamship Co.
Operating manager—H. H. Raymond
Freight manager—W. P. Levis
Ships owned—24; net tonnage—47,169
Shipping board vessels operated—10; net tons—15,795
Home port—New York
Ports served in United States—Boston, New York, Charleston, Jacksonville; Wilmington, N. C.; Brunswick, Ga.

Coastwise Steamship & Barge Co., Seattle

Operating Manager—James Griffiths & Sons
Freight manager—James Griffiths & Sons
Ships owned—1; net tonnage—1452
Home port—Seattle
Ports served in United States—Pacific.

Commodore Shipping Co., Inc., Seattle

Operating manager—Universal Shipping & Trading Co.
Freight manager—Universal Shipping & Trading Co.
Ships owned—1; net tonnage—1339
Home port—Seattle
Ports served in United States—Tramp

Cuba Distilling Co., New York City

Operating manager—W. F. Cochrane, Marine Supt.
Ships owned—3; net tonnage—8263
Home port—New York
Ports served in United States—As occasion may require

J. F. Denechaud, New Orleans, La.

Operating manager—J. F. Stuard
Freight manager—J. F. Stuard
Ships owned—64
Home port—Gulfport, Miss.

S. S. Freeman & Co., San Francisco.

Operating manager—S. S. Freeman
Freight manager—S. S. Freeman
Ships owned—5; net tonnage—2235
Home port—San Francisco

Ports served in United States—Pacific

Gardiner Mill Co., Inc., San Francisco

Line—Gardiner Mill Co., Inc.
Operating manager—C. C. Stevenson, Jr.

Freight manager—C. C. Stevenson, Jr.
Ships owned—5; net tonnage—2845
Home port—San Francisco

Ports served in United States—No regular run

Garland Steamship Corp., New York

Line—Garland Steamship Corp.
Operating manager—W. M. Campion
Ships owned—5; net tonnage—11,275
Home port—Baltimore

General Steamship Corp., San Francisco, Calif.

Line—General Steamship Corp.
Operating manager—Capt. A. T. Hunter

Freight manager—R. S. Wintemute
Ships owned—1; net tonnage—1353
Shipping board vessels operated—9; net tons—24,789

Home port—San Francisco
Ports served in United States—West Coast

Grace Line, Inc., New York

Line—Grace Line
Operating manager—A. L. Scott
Freight manager—A. L. Scott
Home port—New York
Ports served in United States—New York, Baltimore

James Griffiths & Sons, Inc., Seattle

Operating manager—James Griffiths & Sons
Freight manager—James Griffiths & Sons
Ships owned—2; net tonnage—5058
Home port—Seattle
Ports served in United States—Pacific.

Gulf Export & Transportation Co., Inc., Beaumont, Tex.

Line—Bowie Line
Operating manager—W. A. Bowie
Freight manager—D. M. Hall
Ships owned—10
Home port—Beaumont, Tex.
Ports served in United States—Beaumont and Port Arthur, Tex.

Gulf Navigation Co., Inc., New Orleans, La.

Line—Gulf Navigation Co., Inc.
Operating manager—Gonzalo Abaunza
Freight manager—A. Boulogny
Ships owned—2; net tonnage—2105
Home port—New Orleans
Ports served in United States—New Orleans

Gulfport Fruit & Steamship Co., Inc., Gulfport, Miss.

Line—Gulfport Fruit Line
Operating manager—G. A. Korn-dorffer
Ships owned—2; net tonnage—650
Home port—Gulfport
Ports served in United States—Gulfport

Hudson River Day Line, New York

Line—Hudson River Day Line
Operating manager—A. V. S. Olcott
Ships owned—5; net tonnage—7,555
Home port—New York
Ports served in United States—Hudson river

Humble Oil & Refining Co., Inc., Houston, Tex.

Operating manager—E. Mintel
Home port—Houston

Intercoast Steamship Co., Inc., Boston

Line—Intercoast Steamship Line
Operating manager—Arthur L. Crowley

Freight manager—W. K. Irving
Ships owned—4; net tonnage—7500
Home port—Any New England ports

Jamaica Navigation Co., Inc., New Orleans

Line—Bluefields Fruit & Steamship Co.

Operating manager—V. Camors
Freight manager—G. A. Mahe
Ships owned—1; net tonnage—1133

Home port—New Orleans
Ports served in United States—New Orleans

Kirk & Treene, New York

Line—Wyngrave Line
Operating manager—Kirk & Treene
Freight manager—Kirk & Treene
Ships owned—3; net tonnage—7000
Home port—New York
Ports served in United States—Tramp

Fred Linderman, San Francisco

Operating manager—Fred Linderman
Freight manager—Fred Linderman
Ships owned—3; net tonnage 3500
Home port—San Francisco
Ports served in United States—Pacific

Mallory Steamship Co., Inc., New York

Line—Mallory Steamship Co.
Operating manager—H. H. Raymond
Freight manager—W. P. Levis
Ships owned—15; net tonnage—39,857
Shipping board vessels operated—4; net tons 6297

Home port—New York
Ports served in United States—N. Y., Key West and Tampa, Fla.; Mobile, Ala.; Galveston, Tex.

Matson Navigation Co., Inc., San Francisco, Calif.

Line—Matson Navigation Co.
Operating manager—Capt. C. W. Saunders

Freight manager—M. J. Lindsay
Ships owned—10
Shipping board vessels operated—4
Home port—San Francisco
Ports served in United States—Baltimore, Los Angeles, San Francisco, Seattle

Merchants & Miners' Transportation Co., Baltimore

Operating manager—A. D. Stebbins.

president and general manager
 Freight manager—J. B. Sweeny, general freight agent
 Traffic manager—Herbert Sheridan
 Ships owned—14; net tonnage—27,067
 Home port—Baltimore
 Ports served in United States—Boston, Providence, Philadelphia, Baltimore, Norfolk, Savannah, Jacksonville

Edward Merrin, Mobile, Ala.

Operating manager—Mr. Crighton
 Ships owned—1; net tonnage—762
 Home port—Mobile, Ala.
 Ports served in United States—Pacific ports

Metropolitan Marine & Fuel Co., Inc., Boston

Line—Metropolitan Coal Co., Marine Dept.
 Operating manager—A. L. Crowley
 Ships owned—1; net tonnage—1312
 Home port—Boston
 Ports served in United States—Atlantic coast ports

Montauk Steamboat Co., Ltd., 329 P. R. R. Station, New York

Line—Montauk Steamboat Co., Ltd.
 Operating manager—C. L. Addison, vice president
 Ships owned—2; net tonnage—1142
 Home port—Sag Harbor, N. Y.

Munson Steamship Line, New York

Line—Munson Steamship Line
 Ships owned—15; net tonnage—31,748
 Shipping board vessels operated—15; net tons—56,047
 Home port—New York
 Ports served in United States—New York, Philadelphia, Baltimore, Mobile, New Orleans, Boston, Norfolk, Newport News

Naknek Packing Co., San Francisco

Freight manager—Frank B. Peterson
 Ships owned—2; net tonnage—2764
 Home port—San Francisco
 Ports served in United States—Used exclusively in salmon fishing business in Bristol Bay, Alaska

National Oil Transport Co., Inc., Galveston, Tex.

Line—National Line
 Operating manager—W. Hyland
 Ships owned—13; net tonnage—49,500
 Home port—Galveston, Tex.
 Ports served in United States—Galveston, New Orleans, Seattle regularly; also Tramp service.

New England Fuel & Transportation Co., Boston

Ships owned—33; net tonnage—27,933
 Home port—Boston
 Ports served in United States—Boston, New York, Philadelphia, Baltimore, Norfolk, Charleston, S. C.; Providence, Newport News, Portland, Me.

New Orleans-Bluefields Fruit & Navigation Co., 704 Whitney-Central Bldg., New Orleans.

Line—New Orleans-Bluefields Line
 Operating manager—F. D. Armstrong
 Freight manager—F. D. Armstrong
 Ships owned—3; net tonnage—1200 each
 Home port—New Orleans
 Ports served in United States—New Orleans

New Orleans & South American Steamship Co., Inc., New Orleans

Line—Nosa Line
 Operating manager—A. N. Floyd
 Traffic manager—D. A. Dimitry
 Ships owned—2; net tonnage—2800
 Shipping board vessels operated—8; net tons—37,000
 Home port—New Orleans
 Ports served in United States—Atlantic and Gulf

New York & Porto Rico Steamship Co., Inc., New York

Line—Porto Rico Line
 Operating manager—Franklin D. Mooney, president; John E. Craig, vice president
 Freight manager—Robert Wardle, general freight agent.
 Ships owned—14; net tonnage—26,453
 Shipping board vessels operated—1; net tons—2309
 Home port—New York
 Ports served in United States—New York to Porto Rico; New Orleans to Porto Rico

Northwestern Shipping Co., Seattle

Operating manager—Joshua Green
 Ships owned—1; net tonnage—1067
 Home port—Seattle

Oneida Navigation Corp., 20 Exchange Place, New York

Operating manager—F. G. Cornish
 Ships owned—2; net tonnage—2432
 Home port—New York

P. & L. Shipping Corp., Seattle

Operating manager—Universal Shipping & Trading Co.
 Ships owned—1; net tonnage—1947
 Home port—Seattle
 Ports served in United States—Vessel is in tramp service

Polish-American Navigation Corp., 206 Broadway, New York

Operating manager—C. S. Nevelson
 Freight manager—C. Jensen
 Ships owned—6; net tonnage—47,000
 Home port—New York
 Ports served in United States—Atlantic

Publicker Shipping Co., Inc., 1095 Drexel Building, Philadelphia

Operating manager—Charles Kurz & Co., Inc., 1089 Drexel Bldg.
 Ships owned—1
 Home port—Philadelphia

Puget Sound Navigation Co., Colman Dock, Seattle

Operating manager—Wm. E. Mitchell
 Freight agent—C. V. LaFarge
 Ships owned—20; net tonnage—6704
 Home port—Seattle
 Ports served in United States—All

ports on Puget Sound
Blake G. Purdy, 28 T. Wharf, Boston
 Line—Purdy Tow & Water Boat Co.
 Operating manager—B. G. Purdy
 Ships owned—6; net tonnage—248
 Home port—Boston
 Ports served in United States—Boston

Reading Co., 12th & Market Streets, Philadelphia

Line—Philadelphia & Reading Transportation Line
 Operating manager—O. H. Hagerman, Mgr. Mar. Dept.
 Home port—Philadelphia
 Ports served in United States—New York, Boston and Portland, Me.

Red Salmon Canning Co., 73 Main Street, San Francisco

Operating manager—Frank B. Peterson
 Ships owned—3; net tonnage—2735
 Home port—San Francisco
 Ports served in United States—Used exclusively in salmon fishing business in Bristol Bay, Alaska

Redwood Steamship Co., 947 Monadnock Building, San Francisco

Operating manager—Holmes Eureka Lumber Co.
 Freight manager—Holmes Eureka Lumber Co.
 Ships owned—1; net tonnage—292
 Home port—Eureka, Cal.

Resolved Corp., Eleventh Avenue & Twenty-fifth Street, New York

Operating manager—J. Lantz
 Ships owned—1; net tonnage—1646
 Home port—New York
 Ports served in United States—New Orleans and coal ports

Rogers & Webb, 110 State Street, Boston

Line—Rogers & Webb Line
 Operating manager—R. E. Peabody
 Freight manager—Arthur Lane
 Ships owned—15; net tonnage, approximately—18,000
 Shipping board vessels operated—7; net tons, approximately—24,500
 Home port—Boston
 Ports served in United States—Portland, Me. (winter) Montreal, Can., (summer)

San Francisco & Portland Steamship Co., Pier 40, San Francisco

Line—San Francisco & Portland Steamship Co.
 Operating manager—F. Schafer
 Freight manager—H. E. Lounsbury
 Ships owned—2; net tonnage—4454
 Home port—San Francisco
 Ports served in United States—San Francisco, Astoria, Portland

J. W. Somerville Co., Durham Building, Gulfport, Miss.

Ships owned—3; net tonnage—1410
 Home port—Gulfport, Mobile
 Ports served in United States—All Atlantic ports

Tarver Shipbuilding Corp., Beaumont, Tex.

Operating manager—A. H. Tarver
Ships owned—1; net tonnage—542
Home port—Beaumont, Tex.

Tidewater Oil Co., Inc., 11 Broadway, New York

Operating manager—D. T. Warden
Freight manager—D. T. Warden
Ships owned—5; net tonnage—about 18,500

Home port—New York
Ports served in United States—Will run principally between Mexico and New York carrying our own products.

Union Oil Co. of California, Los Angeles

Line—Union Oil Co. of Cal.
Operating manager—Max Dyer
Ships owned—13; 3 chartered; net tonnage, chartered 13,368; owned 41,706

Home port—San Francisco
Ports served in United States—Puget Sound, Portland, Astoria, Oreg.; Coos Bay, Oreg., Eureka, San Francisco, San Luis Obispo, Los Angeles, San Diego, Hawaiian Islands.

U. S. Mail Steamship Company, New York

Line—U. S. Mail Line
Operating manager—R. J. Smith
Freight manager—Mr. Farnham
Ships chartered—13; net tonnage—324,200
Shipping board vessels operated—3; net tons—57,000

Home port—New York
Ports served in United States—New York, Boston, Baltimore

Universal Steamship & Barge Co., Inc., 503 Burke Building, Seattle

Operating manager—James Griffiths & Sons
Freight manager—James Griffiths & Sons

Ships owned—1; net tonnage—828
Home port—Seattle
Ports served in United States—Pacific Ocean Coastwise

Warren Transportation Co., 35 Congress St., Boston

Line—Warren Transportation Co.
Operating manager—Chas. Skentelbery

Ships owned—1; net tonnage—1836
Home port—Boston
Ports served in United States—Coastwise Chesapeake Bay and New England

Williams Steamship Co., Inc., 44 Whitehall St., New York

Line—Williams Line
Operating manager—Geo. T. Williams

Freight manager—Joseph A. Wells
Ships owned—7; net tonnage—60,000
Home port—4 at New York
Ports served in United States—Be-

tween New York, Philadelphia, Baltimore and Los Angeles, San Francisco, Portland, Seattle, Tacoma

Winneconne Steamship Corp., 8 Bridge St., New York City

Line—Foreign Transport & Mercantile Corp.

Operating manager—Capt. W. J. Smith

Freight manager—Capt. W. J. Smith
Ships owned—7; net tonnage—17,779
Home port—New York

Ports served in United States—All ports

Vacuum Oil Co., 61 Broadway, New York

Line—Vacuum Oil Co.

Home port—New York

Ports served in United States—Gulf oil ports

Mississippi Barge Line Moves Record Tonnage

Profits exceeding \$50,000 for the month of April alone are announced for the government-owned and operated barge lines on the Mississippi and War-

record exceeded the February record by 11,715 tons, equal to 1738 freight cars, or the services of approximately 58 freight trains. The April record movement was carried in nine tows of 34 barges, five of which moved upstream from New Orleans with 12,078 tons, the largest movement northward since the establishment of the service on the rivers. The revenue in February averaged \$4.75 a ton, while in April it rose to \$5 a ton, according to Colonel Humphrey.

With 11 towboats in active service on June 1, the Mississippi-Warrior service announced "better than weekly" sailings between Memphis, St. Louis and New Orleans. In addition to the towboats, the government line now has 50 barges in service, of which 40 are of 2000-ton capacity and 10 smaller. Through rates on the barge line are 20 per cent under rail tariffs, and include fire and marine insurance, as well as transfer and terminal charges.

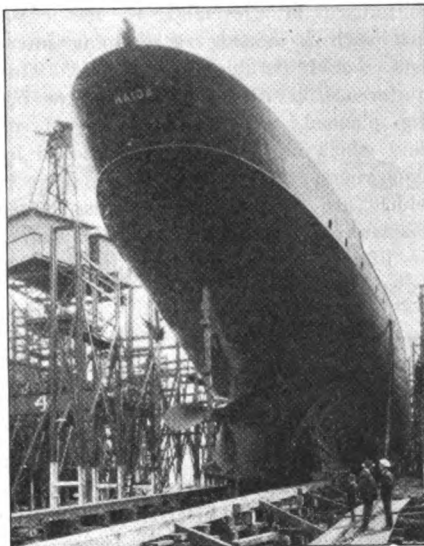
Construction of terminals for the barge line is proceeding rapidly, the latest city to start work on these terminals being Memphis.

New Hudson Liner

Passenger travel on the Hudson has been further improved by the addition of the steamer DE WITT CLINTON to the fleet of the Hudson River Day line. This ship had her inaugural trial on May 12, when, with a party of invited guests, De Witt Clinton, Buffalo, the great-great-grandson of the New York state hero who worked so successfully in joining the water of the Great Lakes to the Hudson by canal, renewed the ceremony of his ancestor by pouring some water from Lake Erie into the waters of the Hudson from the deck of the new vessel.

The DE WITT CLINTON was built in 1913 at the yard of Harlan & Hollingsworth, and was originally designed for the Central of Vermont Transportation Co. for service between New York and Providence. That plan was never carried out and the United States navy purchased her in 1917, renamed her the NOPATIN and used her in the transchannel transport service in European waters during the war. Since then the vessel has been completely reconditioned by the Todd Shipyards Corp., New York.

The vessel measures 340 feet overall, and has a beam of 66 feet overall. She has two 4-cycle, triple expansion engines running twin screws. Her speed is approximately 22 land miles per hour. The ship, however, has a draft of 14 feet and, therefore, it will be impossible to operate her in the north Hudson trade. She will run between New York and lower Hudson ports.



NEW ELECTRIC COAST GUARD CUTTER
The HAIDA, one of the first two coast guard cutters with electric drive, as she appeared just before launching at Oakland, Cal., on April 19. She is the second of four cutters being built by the Union Construction Co. and equipped with the General Electric Co.'s turbine-generator drive, giving a speed of 16 knots. The cutter is 240 feet long, 39 feet wide and 25½ feet deep with a displacement of 1600 tons

rior rivers by Col. G. E. Humphrey, in charge of operations of these lines for the government. The previous high record month was February, when the revenue reached the cost of operations for the first time in the history of the project.

Aside from establishing a new record for earnings, the barge lines handled 34,759 tons of freight in April, making a new high record for volume as well as for value of business. The April

What the British Are Doing

Short Surveys of Important Activities in Maritime Centers of Island Empire

INTEREST in British shipping circles during May centered around the readjustment of seamen's wages. Fortunately reduced scales were negotiated with the unions representing all deck and engine room hands without much difficulty. The new scales, which are now in effect, show an average reduction of seamen's wages in these two departments of £2 10s (\$10) per month. The original proposal of the shipping managers was for a reduction of £4 10s (\$20) per month. This was countered by the representatives of the men with a suggested reduction of £1 10s (\$6) per month. At a meeting of the International Maritime board presided over by F. C. Allen, vice chairman of the Shipping federation, the compromise figure of £2 10s was agreed to. This reduction in wages is expected to have an important effect upon the ability of British shipping managers to compete for the world's trade in the immediate future. Only the stewards are holding out and threatening to make trouble. Efforts have been made on the part of the steward's union to prevent the sailing of several large liners, but up to date these ships have all got away on time, and apparently the stewards' strike is collapsing, although both the *AQUITANIA* and the *ADRIATIC* were compelled to sail during the middle of May with scratch crews in the steward's departments.

THE coal strike is having a serious effect on British shipping and at the present time it is estimated that over 5,000,000 gross tons of vessels are idle.

THERE is good reason for believing that the ex-German liners *KAISERIN AUGUSTE VICTORIA* and *PRINZ FRIEDRICH WILHELM*, which, as already announced, have been bought by the Canadian Pacific, are by no means the only large vessels allotted to Great Britain by the reparation commission which have been bought by British owners. Two other vessels—the *SCHWARZENFELS* and *NAIMES*, of 12,300 tons and 8500 tons deadweight respectively—are understood to have been purchased recently. The total of the vessels of this class which were available at the end of May was 71. In addition there have been sold

7 out of a batch of 11 ex-enemy prize vessels, and 3 out of a set of 4 "additional vessels". The total number of vessels sold through the medium of Lord Inchcape for many months past have averaged about one a day, a rate which, in all the circumstances, may be considered satisfactory.

THE Chamber of Shipping of the United Kingdom has inaugurated a movement looking toward an international shipping conference to be held in London in October. It is interesting to note that this movement was started by the Chamber of Shipping just prior to the statement by James A. Farrell, president of the United States Steel Corp., at the National Foreign Trade conference in Cleveland, to the effect that such a meeting of shipping interests would be highly desirable. This conference, if it is held as is now being planned, will be the first of its kind which has ever been summoned by shipowners. Among the many subjects which are likely to be discussed are charter contracts, maritime law, safety of life at sea, uniformity of shipping legislation, etc.

THE unprecedented slump through which British shipping is passing may be gaged by the fact that in 36 of the principal ports of the United Kingdom over 1000 ships are laid up. These vessels represent a gross tonnage of over 1,700,000 tons. In January last, 600 vessels were laid up representing 940,500 net tons. The position has thus grown worse, due in a great measure to the coal strike. Hundreds of the vast fleet of idle vessels would, except for the coal strike, have been employed in carrying whole or part coal cargoes and returning with raw materials for industrial purposes or with foodstuffs. On the Tyne, over 200 vessels are idle representing 200,000 net tons. At Hartlepool, the net tonnage laid up is approximately 30,000 tons and at Blyth 60,000 net tons.

LITTLE new building is in progress. Evidence of the depression in shipbuilding is afforded by the fact that only two vessels were launched

from the Wear shipyards in April, making a total output for the four months of the present year nine vessels with a gross tonnage of 38,782 as compared with 22 vessels or a total gross tonnage of 102,251 during the corresponding four months of last year. The vessels launched last month were: *GEORGE M. EMBERICOS*, 6200 tons gross, built by Messrs. Short Bros. for a Greek firm, and the *SIAUTOR*, 8422 tons gross, built by Messrs. W. Gray & Co., for a Dutch company.

AT THE Teeside yard of the Furness Shipbuilding Co. efforts are being made to complete a vessel this month. But in the other yards, the little activity shown is mostly on repair work. The position is reflected by the year's record of Messrs. Swan, Hunter & Wigham Richardson Ltd. The firm's annual report shows a net profit on the year's trading of £397,139 (\$1,575,000).

The directors point out that "Although great difficulties have had to be met both with regard to materials and labor, the tonnage launched during the year 1920 in the company's yards on the Tyne, Clyde, and Wear amounted to 170,064 gross register tons, and was one of the largest tonnages launched by any company in the world. A further large tonnage was launched from shipyards in which the company is interested. Progress of work on the ships built and building during the year was very slow, compared with what would have been possible under prewar conditions, and the works did not reach their maximum output, though the number of men employed was larger than in any previous year. This was due to strikes by molders in the foundries and by joiners in the shipyards, to shortage of materials, and to a reduction in the working hours, together with a very unsatisfactory falling off in the output of work during the hours worked."

No new orders for ships have been received during the past six months, and none can be expected until the present excessive costs of building have been greatly reduced. The company was successful in obtaining some contracts before orders ceased to be given, and though it has been necessary, in consequence of the demand for cargo ships



S. S. ARGONNE, LARGEST VESSEL EVER BUILT IN THE ISLE OF WIGHT. SHE WAS CONSTRUCTED BY J. SAMUEL WHITE & CO. FOR FRENCH OWNERS

having failed, temporarily to close the shipyards at Southwick, Sunderland, sufficient work is in hand and in prospect to keep the works moderately employed for the remainder of this year.

* * *

MESSRS. William Gray & Co. recently launched from their Hartlepool shipyard the steel twin screw-geared turbine passenger steamer, CITY

OF SIMLA, which they built for the Hall line of the Ellerman Lines Ltd., Liverpool. Her dimensions are: Length overall, 496 feet 8 inches; breadth extreme, 58 feet 3 inches; depth molded, 34 feet 1 inch. The spacing of bulkheads and other arrangements are in accordance with the board of trade requirements under the international convention rules for safety of life at sea.

Accommodation is provided for 182 first-class and 60 second-class passengers. Steam will be supplied by five large cylindrical multibular boilers working at a pressure of 225 pounds per square inch. The vessel will be fitted with an oil fuel installation, suitable for quick conversion to either oil or coal burning, and working in conjunction with forced draft.

Late News from Foreign Shores

By the Paris Representative of Marine Review

THE congress held in Paris in May of French chambers of commerce has petitioned the government for the prompt dismemberment of the National Merchant Marine, by which the government is operating ships and steamers in competition with private owners and operators. This is actually resulting in a loss of 40 million francs per month, which the public has to pay in the form of increased taxes. No more here than elsewhere has government operation of merchant ships been profitable in peace time. The subject is now up for discussion before the French under secretary of state for the merchant marine.

* * *

Railway Cedes Colliers to America

During the period of hostilities, the French state railways purchased among others two American steam coal carriers, the ALBERT M. MARSHALL and the WACCAMAW, of from 1300 to 1600 tons, since renamed the BRIGNOGAN and the ROYAN. These were operated for the railway account transporting German coal to Rouen and other ports from Rotterdam. The apparent necessity no longer existing, the government has just sold

the two units in question to American operators. This is a distinctly modern version of carrying coals to Newcastle.

* * *

Rhine Fleet of Cargo Boats

In accordance with the treaty terms, Germany is turning over to France 45 towboats and 12 barges representing a total of 20,000 tons. Belgium received 36 of her former Rhine fleet which had been sequestered by Germany during the war. These particular craft belonged to the strong Belgian company La Fluvial and one and all had been rechristened Bayerns. This 40,000 tons of inland waterway shipping has just been brought across and through the Holland canals from the Rhine and in the future will be utilized on international waterways under their rightful Belgian ownership.

* * *

French Oil Carrying Fleet

The ministry of public works, which in one or another of its sub-sections handles all fuel problems and transport, has given the following statement as to the condition and composition of the oil carrying fleet of steamers under the French flag. Those actually in service have a carrying capacity of 51,370

tons while those in construction in French and foreign yards total 227,250 tons, all of the latter being counted upon for completion before the end of 1922. Private tank steamers in service are:

	Capacity, tons	Year built
RADIOLINE	5115	1912
QUEVILLY (motor sailer)	3950	1897
JULES-HENRY (motor auxiliary)	3380	1900
SAINT PATRICE	2845	1919
PECHELBRONN	5080	1914

The government owned tank steamers are:

	Capacity, tons	Year built
DORDOGNE	15,500	1914
GARONNE	7500	1912
RHONE	5000	1910
CZAR NICOLAS (war capture)	3000	1895

Of the steam tankers building, 14 are in construction in France, 10 in England and 4 in Canada. All these under construction are for private owners except four which are being built for government account in the Lorient arsenal.

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How Claim Problems Are Solved

Growth of American Association Indicates Merit of Plan To Meet Protection and Indemnity Needs

A NUMBER of American owners of seagoing tonnage on Feb. 20, 1917, incorporated the American Steamship Owners Mutual Protection & Indemnity Association, Inc., with a view to covering protection and indemnity risks and providing an organization to deal with claims. The association started with about 1,000,000 gross tons of steamships. During the four years of its existence its tonnage has increased to more than 8,000,000 and it has developed into an important adjunct of the American merchant marine.

Before explaining its work in detail it would perhaps be interesting to review, briefly, the history of the protection and indemnity cover. For many years, the British shipowner was content to carry his own liabilities with the exception of the collision liability, three-fourths of which risk he insured under the Lloyd's form of hull policy. As business became more highly organized, there arose in England the need for some method, not only of providing insurance for the remaining one-fourth collision, but of covering also some of the other liabilities to which the shipowner is, necessarily, subject. Accordingly, about 60 years ago some British owners got together and formed a mutual association, with the idea of covering themselves for the one-fourth collision liability and protecting also their liabilities for personal injury and damage to dock. This association was known as a Mutual Protection association and the idea was taken up in different sections of England because at that time shipowners were very local in their connections. Accordingly, in London, Liverpool, Newcastle, Glasgow, Cardiff, and elsewhere, local groups of owners formed their separate "clubs" and made separate arrangements for dealing with their claims.

Include Other Liabilities

These protection associations prospered for a number of years, until the further need arose for cover of cargo liabilities and various minor forms of liability not included in the "protection" cover. Separate indemnity associations were then formed and were combined for management with the protection clubs, but the classes of cover were kept separate and owners entered their vessels for either protection or indemnity, or both, as they saw fit. The distinction between the two classes has no

other *raison d'être*, than the fact that it just grew. England continues to have six or seven different protection and indemnity clubs, the largest of which has about 4,000,000 gross tons. The English associations invited entries of tonnage from foreign countries and, until the end of the last century, it was customary for steamers of other nationalities to be entered in various English clubs, including a number of American steamers.

In 1897, a Norwegian association was started for vessels of Scandinavian ownership only; and in 1910 a group of Swedish owners organized their own association, with headquarters at Gothenburg. The Swedish association comprised all merchant tonnage under the Swedish flag, as the Norwegian association covers practically all tonnage under the Norwegian and Danish flags. The advantage of having an organization on national lines became increasingly apparent, and during the early stages of the war various restrictions were put upon American owners, quite naturally, by the English clubs, which responded to the demands of their own government.

It was, therefore, quite reasonable that a mutual association, embracing a large majority of the American seagoing steamers, should be organized on national lines. The American "club" had been in existence hardly eight months when the government began to requisition vessels under time and bareboat charter. For convenience in handling its claims, the shipping board arranged with the association to extend its cover to protect the government's interest in the requisitioned vessels, and later the German vessels as well as the new steamers were also included under a general agreement to cover all of the vessels of the shipping board engaged in merchant trade.

With the rapid increase in tonnage and the extension of American trade to all parts of the world, it became necessary to organize a service to meet the new requirements, and this the American club has done. Its office in New York employs a large force, including expert surveyors, investigators, adjusters, as well as a legal staff; it is equipped to undertake the investigation and handling of the numerous claims which arise in connection with the operation of so many vessels. It maintains offices in San Francisco, where

similar service is rendered on the Pacific coast, and branch offices in Boston, Baltimore, Philadelphia, New Orleans and Seattle. In other American ports, and in the principal foreign ports, are competent agents to whom masters may apply for assistance in case of claims arising against their steamers. This organization thus relieves the owner of the initiative in dealing with troublesome claims which call for expert handling. At the same time it expedites the owners' business by promptly investigating all claims and by arranging settlements with the claimants.

Cost Is Prorated

The claims after settlement and adjustment are pooled among the members in proportion to gross tonnage, each insurance year being dealt with as a unit. As soon as the total claims are known for each year, the cost is prorated over the members. Pending the final settlement for the year, advance assessments are levied at a fixed rate per ton per annum. An annual management fee is charged which covers all the expenses of management and administration. The resulting cost to the owner works out at a figure approximating one-half of 1 per cent on the valuation of the vessel. An attempt is made to equalize the burden of a hazardous risk by levying additional contribution.

The eight millions or more tons composing the association, make a very wide field over which to distribute any individual losses and afford the shipowner at once the broadest and most economical form of cover for risks which may be very serious. While the insurance against a calamitous claim is an important feature of the cover, probably the greatest incidental benefit derived by the shipowner is the relief from the care and responsibility of the handling of claims. It reduces the staff which he has to maintain. The association, because of its nationwide and worldwide contact with shipping and the expert knowledge at its disposal, is able to apply remedial measures in the direction of claim prevention and in this way saves large sums annually to its members. Instructions are issued from time to time to masters and officers warning them of special dangers in particular trades and urging a higher degree of

care in all steamship operation. The association has taken a lead in measures to check the theft and pilferage of cargoes, and to prevent personal injuries in the loading and discharge of steamers.

The terms of charter parties and bills of lading have had to undergo considerable revision to meet changing conditions and the association undertakes generally to advise members as to clauses appropriate to their particular trade requirements. Among the chief risks covered by the association are the following:

Accidents to any person, including laborers handling cargo, members of crew, passengers, and others; also including loss of life or injury to persons or another vessel by collision. Illness, burial, and repatriation expenses also included. Damage to other vessels and their cargoes otherwise than by collision, including damage by wash of steamer, crowding other vessels ashore, causing two or more other vessels to collide, etc. Damage to docks, piers, jetties, breakwaters, buoys, and other fixed or movable objects; and to property on such docks or piers. Extraordinary quarantine expenses by reason of outbreak of plague, or other contagious disease, on the vessel. Subject to deduction of £40. Damage to cargo, or responsibility for cargo carried or intended to be carried, including shortages and overcarriages, exclusive of shortage consequent on B-L guarantee. Subject to a stated deduction on each voyage.

The acts or neglects of the owner's

agents and servants, incidental to the carriage of cargoes.

Customs and immigration fines, and other fines arising from neglect or default of captain or crew.

Expenses of removing the wreck of a vessel.

Cargo's proportion of general aver-

of the United States shipping board; secretary, Russell H. Loines, and counsel, James A. Hatch. The managers are Johnson & Higgins, 49 Wall street, New York.

Unless the constitutional convention now in session at Baton Rouge, La., radically reverses action of the committee on state lands and canals, all publicly owned inland waterways will pass under control of the board of commissioners of the port of New Orleans. Provision for this action is embodied in a clause for the new constitution presented by Harry W. Fitzpatrick, delegate from New Orleans. The new law applies at present only to the New Basin canal in New Orleans, the Inner Harbor and Navigation canal, recently completed, having been the property of state and city, controlled by the dock board. If the state takes over the Bayou St. John, also known as the Old Basin canal, as now planned, this also will become a charge of the dock board.

Final survey and platting of the 582 acres of land purchased by the Public Belt railroad at New Orleans for the construction of a bridge across the Mississippi river

has been completed, and plans for the bridge itself are being drawn. The lands for the approaches at each end of the bridge are so situated that connection with all rail lines entering New Orleans is comparatively easy.

Financing of the bridge, it is expected, will require approximately \$10,000,000.



ALBERT GILBERT SMITH

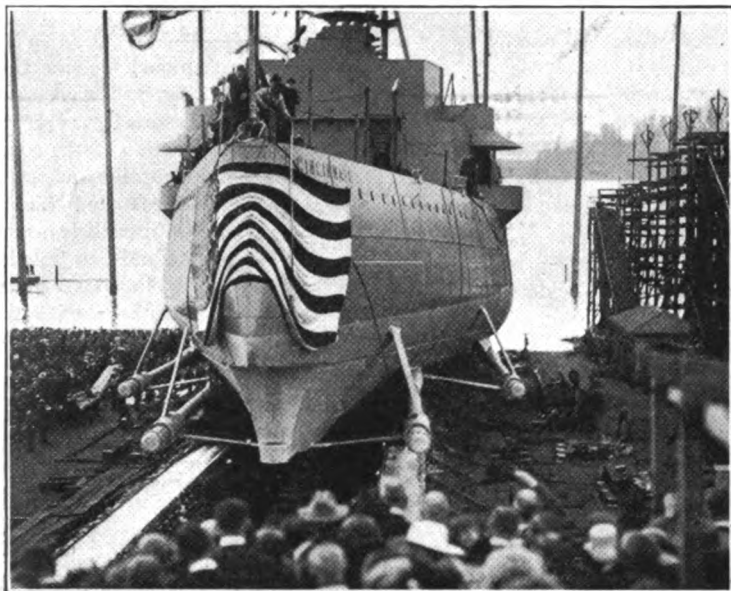
Chairman of the American Steamship Owners Mutual Protection & Indemnity Association, Inc.

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age if not otherwise recoverable, as in cases when the G-A is brought about by the vessel's negligence.

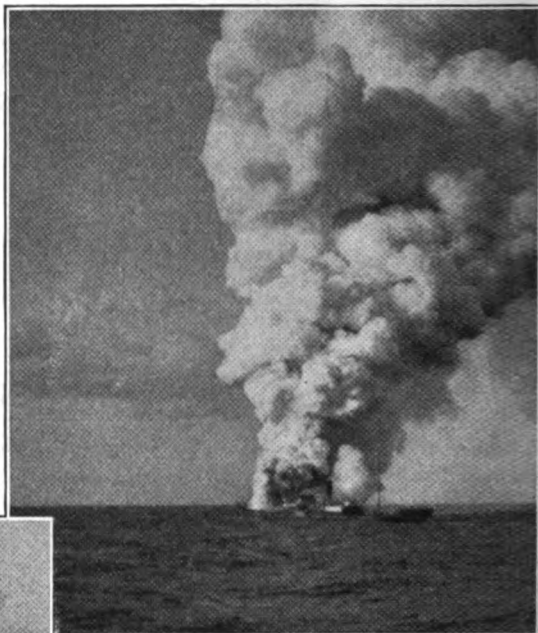
The officers of the association are: Chairman, Alfred Gilbert Smith, William A. Thompson Jr., deputy chairman, Maurice Bouvier, C. W. Jungen, Harris Livermore, and W. B. Keene

Photographs from Far and Near

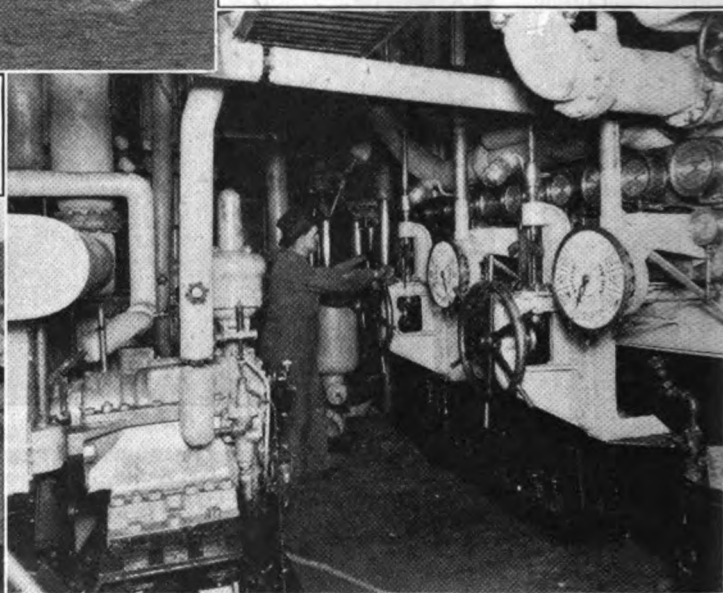
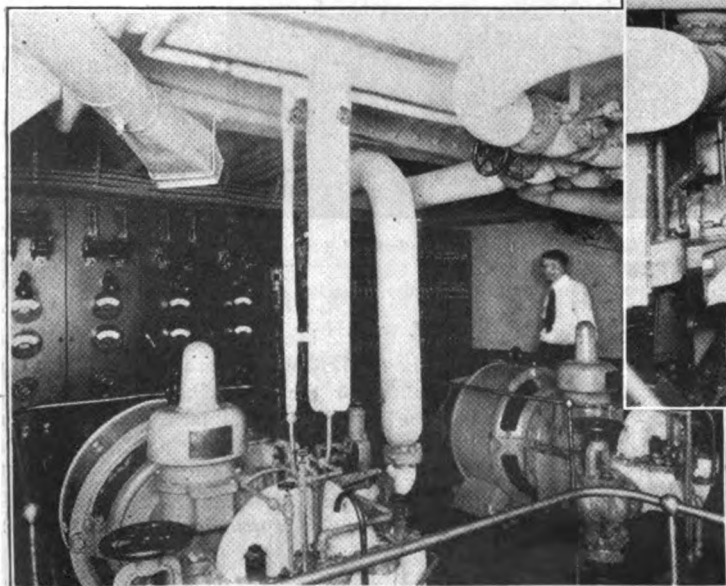


Scout cruiser Cincinnati, last of three sister naval vessels to be launched by the Todd Dry Dock & Construction Corp., Tacoma. Ohio river water mingled with champagne in the christening.

New Japanese steamer Tokuyo Maru was totally destroyed by fire 40 miles off Oregon coast on May 2.

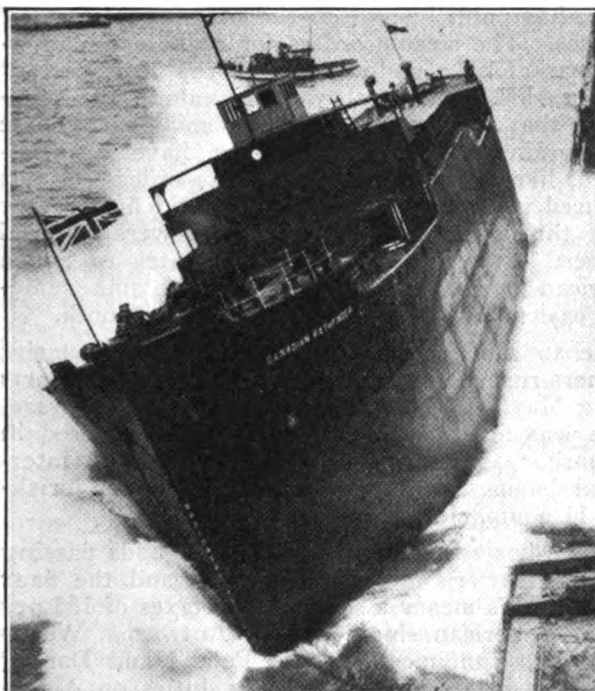


Famous liner Yale passing sister ship Harvard on first trip in resumption of Los Angeles-San Francisco service established before the war. Rebuilding from auxiliary naval vessels was done by the Los Angeles Shipbuilding & Dry Dock Co.

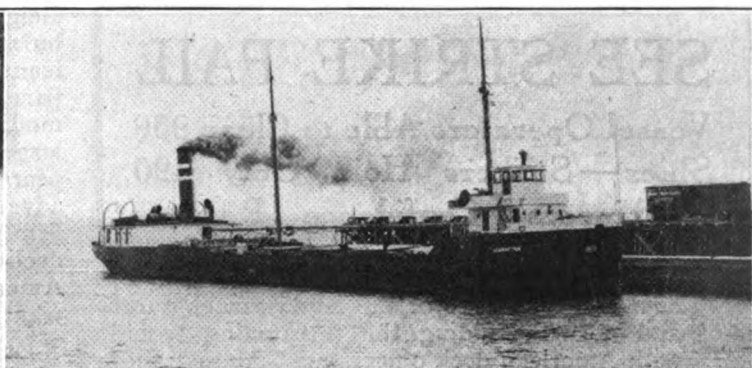


Maneuvering valves and lighting sets installed by the Westinghouse Electric & Mfg. Co. on fast American passenger liner Wenatchee.

Latest Marine News in Pictures

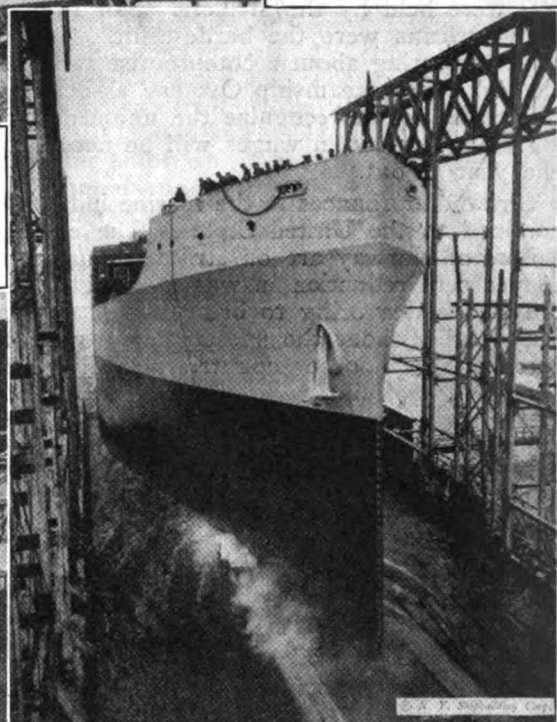
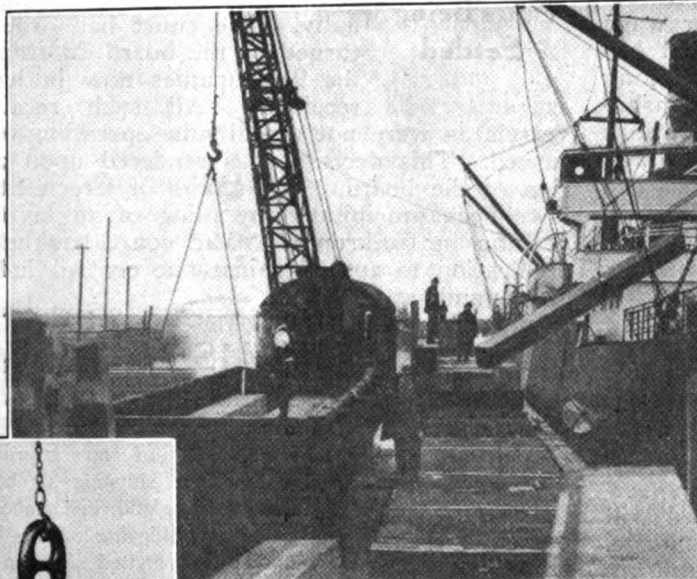


Lake-type ocean going vessel Canadian Pathfinder being built by Collingwood Shipbuilding Co. for the Dominion government.



Glenafton just delivered by Port Arthur Shipbuilding Co., Port Arthur, Ont., designed for both fresh and salt water service.

Loading Japanese squares, fir sticks 24 inches square and from 24 to 40 feet long, at Seattle.

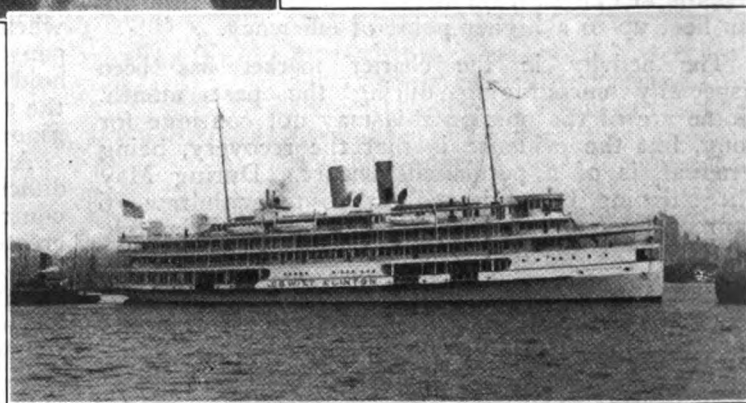


American liner Blue Hen State, now being fitted for the third-class, north Atlantic passenger trade.



Each link of chain for new U. S. battleships weighs 130 pounds and is 21 inches long, 12½ inches wide and 3½-inch section. Photograph from National Malleable Castings Co.

A descendant of De Witt Clinton repeated his ancestor's ceremony of emptying cask of Lake Erie water into Hudson river when this new vessel entered service.



World Charter Market Reviewed by

SEE STRIKE FAIL

**Vessel Operators Able to Clear 936
Ships — Strikers Hold Only 190
— Shippers' Confidence Returns**

DESPITE the strike of the American engineers and notwithstanding the threatening trouble with American deck officers next August, more confidence recently has been shown in the shipping situation than for some time. The coal market continued active during May and many other orders have been fixed. The engineers' strike has not seriously crippled the American merchant marine. During the first 22 days of the strike, a total of 936 American steamers were able to depart while only 190 were held by the strikers. San Francisco and New Orleans were the hardest hit. Governmental efforts to bring about a compromise were futile and the American Steamship Owners' association insists it intends not to recognize the union and that possibly another cut in wages will be necessary before the year is out.

Strike disturbances in the marine industry are not confined to the United States. The engineers and sailors of Norway are on strike against a proposed 33 per cent reduction in wages. English operators are also endeavoring to bring about a lower wage scale and without the spectacular trouble that has been staged in other countries. Following a long period of capitulation to the unions, the steamship interests at Buenos Aires are endeavoring to utilize nonunion longshoremen for loading and unloading. Their efforts are proving somewhat successful. The Munson liner *MARTHA WASHINGTON* has left on her return voyage, after being held at the Argentine port for nearly two months.

May Again Try To Sell Abroad

Another effort is being made by the shipping board to dispose of some of the government tonnage. An offer to sell three steel cargo steamers brought bids from Carter & Carter, New York, and from the Luckenbach line. The board has also asked for bids on six ex-German vessels. It is also understood the board will attempt again to sell abroad its surplus tonnage. This is in line with the desire of the board to bring its fleet up to a higher point of efficiency.

The activity in the charter market has been especially encouraging during the past month. Some are of the opinion this may not continue for long, but the evidence is that the recovery, being gradual, is of a permanent nature. During May the shipping board issued orders to withdraw 76 more ships from caretaker, assigning approximately 500,000 deadweight tons more to the active American fleet.

To the shipping board is due much of the credit for bringing a form of stability in the rate situation. Joseph A. Nash, manager of the Lloyd Royal

Belge, has publicly praised the board for its stand on rates. The sizable orders for coal in the American market have undoubtedly played an important part in this. But coal was not alone the commodity that was offered freely for shipment. Some large grain orders for Hamburg have also appeared, likewise some miscellaneous orders. Rates advanced in the transatlantic trade and held rather firmly throughout the month. There were material declines, however, in the outward rates to South American ports, but the situation became somewhat easier during the latter part of the month.

Due to the enactment of the emergency tariff, steamers rushed sugar from Cuba to American ports during May. In Philadelphia every available warehouse was filled and some craft were chartered in the harbor as temporary warehouses. The inter-coastal business has developed considerable briskness, 11 companies being kept active.

France has removed the surtax on goods passing through Antwerp to Alsace-Lorraine and the Saar district. This means a saving of surtaxes of 153 per cent on American shipments via Antwerp. Washington also announced that as Poland and Danzig do not impose any discriminatory duties on American vessels, their ships will be given equal treatment in American ports.

Receiver Suits Being Settled

Settlement of the receivership cases involving vessels bought upon the deferred payment plan from the shipping board is proceeding gradually. The court has ordered returned to the board 22 ships from the 9 companies now in hands of receivers. All such receivership vessels as were not actually in operation were returned. This decision was rendered upon application of the board. The affairs of Green Star line have been precipitated by filing of an involuntary petition in bankruptcy. The court has held that application to apply against one or two individual ships and not against the operating company. Now the United States Steamship Co. is suing the government because the board demanded back ships sold it when the company refused to hold out against the striking engineers.

All of these difficulties have contributed to create some hostility toward the board. A formal accusation of favoritism filed

World Shipowners Meet

INTEREST of American shipowners has been aroused by the announcement of an international conference on shipping to be held in London, England, in October. The Chamber of Shipping of the United Kingdom has invited shipowners of the world to meet at that time to discuss many marine problems which have gained international importance. American support is indicated by the attitude of James A. Farrell, in urging such a conference as a means of preventing the present serious losses in the shipping business. Problems such as the establishment of a fixed percentage of each nation's merchant fleet to be kept active during a shipping depression, are to be considered.

Experts in this Country and Abroad

against W. Davis Conrad, chief admiralty counsel of the board, was dismissed after investigation. While these developments are in many ways unfortunate, their disposition leaves the shipping board in a position to proceed with its general plans.

Efforts have been made by the board to reduce the number of its operators. During the first week in May the number was reduced from 110 to 93. In addition the lake-type and smaller vessels are being utilized in so-called feeder services. There are two such services in the Orient, where the system was begun. Other feeder services since inaugurated are in the Philippines, Mediterranean, Continental and English ports, Baltic, and now along the east coast of South America.

One of the largest operators of shipping board vessels, the J. H. W. Steele Co., which has operated boats from New Orleans, Galveston and gulf ports to the United Kingdom, has decided to turn back its ships to the board. This decision was arrived at through some controversy with the board over method of management. It is reported the Steeles will attempt to continue with other vessels under the American flag. One of the reports current is that the shipping board berth will be divided between Lykes Bros., and Trosdal, Plant & La Fonta, both being already agents for board ships.

Admitted To Overseas Conference

The United States Mail line has been admitted to two transatlantic conferences of passenger lines, according to word received from Europe. This line plans placing the GEORGE WASHINGTON and the AMERICA in service within the month. The line has also asked the shipping board to assume the cost of reconditioning the AGAMEMNON and the MOUNT VERNON two more ships which it has chartered from the government. The Baltic-American line will inaugurate a direct passenger service from Libau and Danzig to Halifax, N. S., with their new steamer LATVIA.

Names New Board

PRESIDENT Harding has finally succeeded in building a new board, the members of which are: Chairman, A. D. Lasker, advertising man, Republican, Illinois, 6-year term representing the middle states; Edward C. Plummer, lawyer, Republican, Maine, 2-year term and Admiral W. S. Benson, naval officer, Democrat, Georgia, one-year, Atlantic states; George E. Chamberlain, Democrat, Oregon, 4-year term and Meyer Lissner, lawyer, Republican, California, one-year term representing the Pacific states; T. V. O'Connor, union leader, Republican, New York, 5-year term representing the Great Lakes and F. I. Thompson, publisher, Democrat, Alabama, 2-years, the gulf.

That private American lines are not entirely unprofitable was attested to by the financial report of the American Ship & Commerce Co., which earned a net profit of over \$1,500,000 last year, representing an equivalent of \$2.33 per share of no par value. The International Maritime Corp. has discontinued its Scandinavian service. Robert McGregor, one

RATE WAR IS OFF

Threat of Transpacific Freight
Cutting Disappears — Conference
Revived, Routs Dissatisfaction

of the founders of the Green Star line, who recently purchased two iron steamers, SENATOR and BETHLEHEM, expects to charter these out for the present.

The A. G. W. I., through its subsidiary the Atlantic Gulf Petroleum Corp., is prepared to start its oil refinery in England. This will give occupation to the tankers which this company has. The HERMAN WINTER and the H. F. DIMOCK, two freighters of the United Fruit Co. line, have been chartered for the Central American fruit trade again.

In the coastwise services, the most important announcement of the month, was the American Shipbuilding Co. will organize the Independent Steamship Co. to transport fruit in the intercoastal trade. It is said that 10 lake-type vessels will be converted into refrigerator ships, and that their operation will be upon arrangement with the California Fruit Growers' exchange.

The Luckenbach line has established a regular intercoastal line out of Mobile with the PLEIADES. The Williams line will place the motorship KENNECOTT of the Alaska Steamship Co., in the intercoastal service. The Merchants & Miners Transportation Co.'s passenger service between Boston and Philadelphia is to be resumed.

An agreement has been reached by the German government to settle the claims of the German lines for losses sustained during the war. This will enable them to construct new tonnage. The Hamburg-American line expects to place three 22,000 gross-ton vessels in the New York-Hamburg service this summer. It is said that Swedish shipowners are transferring their vessels to the German flag to reap the benefit of lower wages.

The Royal Mail Steam Packet Co., Ltd., inaugurated its New York-England services last month, and the Cunard line placed its new oil burner, CAMERONIA, in the New York run. The Ottoman-American line opened its service between New York and Constantinople with the GUL-DJEMAL.

Charter conditions in the north Pacific have shown little change during the month. The demand for tonnage has not improved although one or two sailing vessels have been fixed to carry freight which steamers were unable to handle because of the marine strike. Threats of a transpacific freight war have been dissipated by the rejuvenation of the transpacific conference. San Francisco members recently exhibited signs of dissatisfaction and withdrew. Columbia River, Puget Sound and British Columbia lines held firm and awaited results. The situation was so threatening that New York Oriental opera-

Plan To Operate in Two Groups

tors sent a delegation to San Francisco for the purpose of adjusting differences. This result has now been attained and while all the San Francisco lines have not rejoined the conference it is understood that they have agreed to maintain conference rates. It is now planned to operate with two conferences, one including the California operators, and the other the lines running out of northern ports. Rates have been generally maintained except on cotton which has been cut from 50 cents to 35 cents per hundredweight.

Business on the Oriental routes has improved, there being a noticeable increase of cargo eastbound. However, the Japanese lines are obtaining most of this new business, the American liners reporting return freight hard to get.

During the month, about 20,000 tons of wheat have been shipped from Columbia river to Japan the conference rate being \$7. Flour is on the same basis but millers report it is almost impossible for them to invade Oriental markets under present conditions. On July 1, the rate on lumber to the Orient will be raised from \$10 to \$12.50, all available space to that date already being booked under the old rate.

The intercoastal lines are building up a substantial business largely at the expense of the railroads which are greatly alarmed by this development. Some minor readjustments of rates have been made by the intercoastal conferences, westbound reductions having recently been announced on a number of articles including some iron and steel products and ship plates approved by Lloyds and consigned to shipbuilding companies. On the latter item, the rate is cut from 75 cents to 70 cents per hundredweight.

The marine strike has not strengthened offshore rates as was expected by foreign operators. The strike has affected the coastwise business most severely, offshore American vessels as a rule having obtained crews although there has been more or less delay.

Recent charters include several steamers for wheat and flour from north Pacific to United Kingdom and Europe. While the shipping board is holding firm at 65 shillings for this business, foreign carriers have been taken at various figures, one fixture being made at 57 shillings, 6 pence with liberal concessions in the way of dispatch money, commissions, etc. During June additional wheat will be shipped and foreign carriers are offering freely at rates below those asked by American operators.

Little demand exists for sailing vessels to freight lumber. Many sailers are idle at north Pacific ports as owners figure they can not operate except at a loss under going rates and present costs.

Altogether, little promise is offered in the immediate future for owners as ocean freights give no indication of rising. Foreign exchange is retarding purchases by foreign buyers and the supply of vessels greatly exceeds the demand. Operators generally believe that James A. Farrell offered the fundamental solution when he advocated an international agreement for withdrawing surplus tonnage and recommended a drastic revision of American navigation laws to afford United States shipping opportunity to compete on a more equitable basis with foreign ships.

Although the freight conditions on the Atlantic are improved the passenger lines are experiencing

considerable trouble. Traffic is not heavy this year and the new immigration law will put a stop to the very profitable third-class business. In the severe competition for business there will undoubtedly be rate-cutting. The steorage rate from New York to Trieste has already been reduced from \$125 to \$100.

New England Traffic Increases

Traffic from Boston, Montreal and Portland, Me., increased noticeably during the past month. Portland's losses were more than made up by increases at Montreal, and Boston did more than hold its own in spite of losing considerable tonnage to the Canadian port. Two Boston shipping companies rather than let the western grain traffic slip out of their hands have established headquarters at Montreal, and are operating four shipping board steamers, two in the Scandinavian service and two to the United Kingdom. A reduction in rates to United Kingdom points was made early in June. Grain dropped from 25 cents to 21 cents. An increase in imports at Boston has been made in wool, coffee and some other commodities. General cargo covers the bulk of the export business. Machinery, shoes, leather, manufactured cotton and produce have figured among the important exports.

At Portland, conditions are reported quiet, but this is only normal for the summer. Part of the loss in grain cargo at Portland has been made up in the coastwise trade in lumber and in imports of wood pulp. The marine strike is still nominally in effect, but is causing no delays to boats sailing to and from New England ports. Heavy tanker cargoes have been arriving during the past few weeks at Fall River, Mass. An appreciable portion of the oil is for bunkers for which the open market at present is \$2 with 10 cents lighterage charge.

Several new services have been recently added from Boston. Furness-Withy & Co. with the steamer SACHEM started a service from Boston to Halifax and Liverpool. The Dollar Steamship Co. with the ESTHER DOLLAR started a new service between Boston and the Far East. Rogers & Webb have again started service between Boston and Greek, Turkish and Black sea ports. The first sailing was with the steamer BLAIR. Boston has made rapid strides toward regaining its prewar passenger service and the spring has seen many new passenger lines transferred to the New England port from other districts.

Violence Shown at New Orleans

The worst violence which developed during the strike of seamen in American ports, occurred at New Orleans, where crews were taken from some vessels, badly beaten, and driven ashore by armed gangs who maintained for some time a fast launch in the river from which they boarded ships attempting to clear with nonunion crews. At least two ships were badly damaged by being cut from their moorings and allowed to drift together in the night. This had a bad effect, not only on charters and clearances, but on arrivals at New Orleans as well, since ship-owners diverted a number of their vessels to other gulf ports, fearing serious injury to their crews if instructed to land at New Orleans. In spite of this and in the face of a somewhat unexpected subsidence in the demand for full-cargo steamers, 139 vessels, with tonnage of 312,282, cleared from Gulf

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to June 3, 1921, on Future Loadings

New York to	Grain	Provisions	Cotton (H.D.)	Flour	General Cargo cu. ft.	100 lbs.	Finished steel	Coal from Virginia cities	From North Pacific Ports to	Lumber Per M. ft.
Liverpool.....	\$0.29	\$0.75	\$0.37½	\$0.34	\$0.45	\$0.85	\$ 8.00T	.....	San Francisco.....	\$ 7.50
London.....	0.29	0.75	0.37½	0.34	0.45	0.85	8.00T	.....	South California.....	8.50
Christiania.....	0.30	0.50	0.72½	0.35	0.55	1.00	10.00T	6.25T	Hawaiian Islands.....	15.00
Copenhagen.....	0.30	0.50	0.72½	0.35	0.55	1.00	10.00T	6.25T	New Zealand.....	20.00
Hamburg.....	0.24	0.55	0.50	0.29	0.45	0.82½	9.00T	5.50T	Sydney.....	20.00
Bremen.....	0.24	0.55	0.50	0.29	0.45	0.82½	9.00T	5.50T	Melbourne-Adelaide.....	25.00
Rotterdam.....	0.22½	0.50	0.45	0.27½	0.40	0.75	8.00T	5.00T	Oriental ports.....	10.00
Antwerp.....	0.22½	0.50	0.50	0.27½	0.40	0.75	8.00T	5.00T	Peru-Chile.....	18.00 to 20.00
Havre.....	0.22½	0.40	0.40	0.25	0.25	0.50	6.00T	5.75T	South Africa.....	27.00 to 30.00
Bordeaux.....	0.22½	0.40	0.40	0.25	0.25	0.50	6.00T	5.75T	Cuba.....	20.00
Barcelona.....	0.30	1.25	0.55	0.65	—20.00T—	16.00T	6.25T	.....	United Kingdom.....	175s
Lisbon.....	0.30	1.25	0.80	0.65	—20.00T—	16.00T	5.75T	.....	United Kingdom (ties).....	150s
Marseilles.....	0.30	0.75	0.80	0.40	—20.00T—	10.00T	6.25T	.....	New York.....	\$20.00
Genoa.....	0.25	0.75	0.75	0.50	0.50	1.00	9.00T	6.25T	New York (ties).....	18.00
Naples.....	0.25	0.75	0.75	0.50	0.50	1.00	9.00T	7.00T		
Constantinople.....	0.27½	18.00T	1.00	0.32½	—22.00T—	15.00T	7.00T	.....	
Alexandria.....	0.27½	18.00T	.....	0.32½	—22.00T—	15.00T	6.00T	.....	
Algiers.....	0.35	0.85	.....	0.40	—22.00T—	12.00T	6.00T	.....	
Dakar.....	26.00T	23.00T	23.00T	20.00T	—23.00T—	20.00T	.....	.....
Capetown.....	26.00T	23.00T	23.00T	20.00T	—23.00T—	15.00T	.....	.....
Buenos Aires.....	.....	.....	.....	.....	—20.00T—	12.00T	4.50T	.....	
Rio de Janeiro.....	.....	.....	.....	.....	—22.50T—	16.50T	4.50T	.....	
Pernambuco.....	.....	.....	.....	.....	—23.00T—	17.50T	5.00T	.....	
Havana.....	0.46*	0.50*	.....	0.46*	0.47*	0.94*	0.46½*	2.50T		
Vera Cruz.....	.....	0.70	.....	0.75	0.52½	1.05	0.60	4.00T		
Valparaiso.....	.....	1.25	1.16	1.00	0.74	1.32	16.00T	5.75T		
San Francisco.....	.....	0.75	.....	0.85	25.00	30.00T	15.00T	.....	
Sydney.....	.....	.....	.....	.....	—21.00T—	18.00T	.....	.....
Calcutta.....	.....	21.00T	.....	.....	.....	.....	.....	.....
T—ton	†Landed	††Heavy products limited in length.	*Extra charge for wharfrage.							

Principal Rates To and From United Kingdom

Grain, River Plate to United Kingdom.....	55 0	Iron ore, Bilbao to Middlesborough.....	7 0
Coal, South Wales to Near East.....	nominal	General British market, six months time charters, per ton	6 0
Coal, Newcastle to France.....	nominal	per month.....	6 0

Bunker Prices

At New York				At Philadelphia				At Boston			
Coal	Fuel oil	Diesel oil		Coal	Fuel oil	Diesel oil		Oil, open market.....	\$2.00		
Alongside	16 baume	gravity 25-30		per ton	16 baume	gravity 25-30		Lighterage charge.....	10		
per ton	per barrel	per gallon			per barrel	per gallon		Shipping Board contract.....	2.00		
Jan. 8.....	\$7.00	\$2.94	10 cents	Jan. 10.....	\$9.45	\$2.08	.....	Bituminous coal, T. I. V.....	8.75		
Feb. 5.....	5.40 @ 6.80	2.50	9 cents	Feb. 8.....	8.40	2.31	8.2 cents				
Mar. 7.....	5.25 @ 6.75	2.35	9 cents	Mar. 7.....	7.60	2.10	6.5 cents				
Apr. 6.....	6.40 @ 6.75	1.95	6.5 cents	Apr. 7.....	5.75 @ 6.00	1.98	5.7 cents				
May 7.....	6.35 @ 6.50	1.85	6.5 cents	May 10.....	5.50 @ 5.90	1.68	6.2 cents				
June 3.....	6.00 @ 6.30	1.70	5 @ 6 cents	June 8.....	5.65 @ 5.90	1.89	5.7 @ 5.4 cents				

of Mexico and South Atlantic ports of the United States during the week ended May 23. Owing to the strike, the clearances were considerably less than the arrivals, 237 vessels having entered, with total tonnage of 544,545.

Charters closed during May from the gulf ports were few, and sailing vessels led the lists in charters for lumber for Cuban ports. Indications for sailing vessel charters are much better than for steam, since the sailing ships are well supported in coastwise, West Indian and Central American trade. Grain movements, on charters made in April, for the

United Kingdom, West Italy and Mediterranean ports, have been surprisingly steady, and inquiries for sulphur charters from the Sabine river district increased during the last week in May. Grain charters from gulf ports to west Italian ports were made at varying figures, one for July 25 being recorded at 8 shillings, and another, from gulf ports to Messina or Palermo, at \$7.30 per ton, prompt. Another was recorded from a gulf port to the United Kingdom, for May 5 to 25, at 7 shillings 4½ pence. Gulf ports to Antwerp charters went at 7 shillings 6 pence, for an indeterminate date in May.

Yard Wages Cut as Ship Values Drop

From Our European Manager

London, June 10 (By Cable)—Chartering of American coal on account of the national strike has passed its peak. Quotations on grain from the River Plate are higher, now being quoted at 55 shillings against 52 shillings, 6 pence a month ago and 40 shillings in April. Some activity is shown in near and far eastern trade including rice from Bombay to Germany at 35 shillings. Danube to United Kingdom business is going at 22 shillings.

Shipyards are cutting wages 15 per cent, 7½ per cent to take effect June 16 and 7½ per cent on July 16.

Recent London sales of steamers brought record low figures, a 5500 deadweight ton vessel being auctioned at £7, 5 shillings, 6 pence per ton (\$27.65); a 9250 deadweight ton vessel going at £10, 4 shillings, 9 pence (\$38.90); ex-German vessels, 6 years old, £5 (\$19) per ton.

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING
Alcaeus Hooper	May 12	Grounded	Stone Horse Shoal	Undamaged	Eastern Leader	May 27	Collision	Limerick	Unknown
Arnus	Apr. 27	Leak	Off Penmarch	Total loss	Felbeck	May 19	Disabled	Astoria	Unknown
Audace	Apr. 17	Grounded	Ak-Bashi Iima	Jettis cargo	Esperanto	May 30	Foundered	Cape Sable Island	Not stated
Asabeth	May 10	Grounded	Danzik	Not stated	Emily F. Northam	May 28	Collision	City Island	Slight
Aster	May 14	Grounded	Triumph Reef	Not stated	Farnam	May 9	Disabled	Key West	Pump and boiler trouble
Astmacho No. 3	May 16	Grounded	Nantucket Shoals	Not stated	Florine	May 18	Missing	At sea	Unknown
Amassia	May 16	Disabled	Hamburg	Eng. damaged	Giulia	May 2	Disabled	Bermuda	Prop. damaged
Annetta	May 23	Disabled	Philadelphia	Boil. trouble	George G. Henry	May 14	Collision	Tampico	Bows damaged
Admiral Watson	May 19	Disabled	Port Townsend	Mach. trouble	Guadiana	May 16	Collision	Marseilles	Stem damaged
Asquam	June 2	Disabled	At sea	Boil. trouble	George Washington	June 1	Fire	Hoboken	Unknown
Aniwa	May 30	Disabled	Montevideo	Mach. trouble	Huron	May 8	Disabled	New York	Winches broke
Bari-Bi	Apr. 25	Struck obstacle	Ushant	Total loss	Hercule	Apr. 28	Disabled	River Seine	Lost anchor
Batavia	Apr. 30	Fire	Batavia	Lost cargo	Heracles	May 18	Collision	Newport News	Slight
Beacon Grange	Apr. 30	Disabled	Montevideo	Brine pipe trouble	Holbly	May 18	Collision	Off Canso	Unknown
Benalla	May 13	Beached & Collision	Off Cherbourg	Port side damaged	Hamburg Maru	May 23	Collision	Galveston	Slight
Bryntawe	Apr. 29	Grounded	Martin Garcia	Not stated	Huron	May 28	Disabled	Gravesend Bay	Steerer trouble
Bradlyde	May 14	Grounded	Brooklyn	Not stated	Harperley	May 21	Fire	West Hartlepool	Slight
Baltimore & Ohio car floats	May 6	Ashore	New Brighton	Not stated	Independent Bridge	May 6	Disabled	Delaware Capes	Eng. trouble
Bahia Blanca	May 20	Disabled	Philadelphia	Mach. trouble	Inventor	May 1	Fire	Durban	Not stated
Brenta	May 19	Collision	New Orleans	Stem damaged	Indiana Bridge	May 23	Grounded	Aarhus	Not stated
Bound Brook	May 25	Disabled	Queenstown	Boil. trouble	John A. Beckerman	May 12	Grounded	East Cape	Undamaged
Belgium Maru	May 5	Heavy weather	Naples	To cargo	John A. Campbell	May 19	Ashore	Nukalofa	Not stated
Birk	May 7	Fire	Antwerp	Hull damaged	Jomar	May 18	Collision	Newport News	Not stated
Blossom Heath	May 9	Fire	Rouen	To cargo	Jacob T. Kopp	May 23	Grounded	Buffalo	Slight
Bengloe	May 17	Collision	Singapore	Heavy	Jacques Fraissinet	May 16	Collision	Marseilles	Undamaged
Bantu	May 25	Disabled	Port Townsend	Pump trouble	Kaylan	May 1	Heavy weather	Antwerp	Mail damaged
British Marshall	May 29	Disabled	Plymouth	Mach. trouble	Keyingham	May 14	Grounded	Mouth of Saguenay	Not stated
Buckeye State	May 31	Fire	Baltimore	Slight	Karen Rogenaes	May 25	Disabled	Hampton Roads	Eng. trouble
Captain A F Lucas	May 3	Grounded	Astoria	Slight	Knockherna	May 27	Disabled	Norfolk	To rudder-post
Chickamauga	May 7	Disabled	Halifax	Steerer damaged	Lena	Apr. 30	Struck bank	Suez Canal	Undamaged
Chautauqua	May 6	Grounded	Gulfport	Not stated	Louise	Apr. 30	Gale	Off Point Reyes	To jib-boom and mast head
Carmania	May 9	Ice and fog	Cape Race	Not damaged	Lucy May	May 11	Waterlogged	Southwest Harbor	Not stated
Cecilia Sudden	Mar. 9	Disabled	Auckland	Not stated	Lady of Gaspe	May 18	Collision	Off Canso	Unknown
Charlie & Willie	May 6	Heavy weather	Portland	Broke mainmast	Laketon	May 21	Collision	Cleveland	Heavy
Clearwater	Apr. 30	Struck bank	Suez Canal	Undamaged	L. W. Robinson	May 23	Collision	Montreal	Not stated
Clearton	May 14	Collision	Lambert's Point	Not stated	L. J. Drake	May 28	Disabled	American Shoals	Eng. trouble
Colonel Rochester	May 13	Leaking	Quebec	Not stated	Lysglint	May 1	Fire	At sea	Total loss
Chile	May 14	Fire	Hull	To cargo	Liberty Minquas	June 2	Disabled	Key West	Mach. trouble
Coelleda	May 14	Disabled	Delaware	Pump trouble	Laura A. Barnes	May 28	Grounded	Bodies Island	Total loss
Cranley	May 15	Collision	Gravesend	Bows damaged	Mabel E. Gunn	May 6	Gale	At sea	To mainmast and deck-load
Canadian Pioneer	May 11	Disabled	Bermuda	Not stated	Montauk	May 10	Disabled	Off Halifax	Lost prop. blade
City of Elwood	May 18	Disabled	Off Florida	Mach. trouble	Mahanoy	May 13	Grounded	Reedy Island	Not stated
Chickamauga	May 23	Disabled	Halifax	Steerer broke	Mary C.	May 12	Beached	Sandy Hook	Not stated
Canadian Maid	May 20	Missing	At sea	Not stated	Mabel E. Goss	May 13	Sank	Sullivan	Total loss
Canobie	May 22	Grounded	Soulanges Canal	Lost prop.	Mary Stuart	May 13	Ashore	Gibara	Not stated
Canadian Trader	May 26	Fire	St. Johns	To cargo	Mijdrecht	May 10	Disabled	Bermuda	Mach. trouble
Charlot	May 25	Disabled	Off Greenwich	Eng. trouble	Margaret Thomas	May 19	Listed over	Portland	Boil. loosened
Capt. Thomas Wilson	May 21	Grounded	Lake Superior	Leaking	Mexicano	May 9	Explosion	Tampico	Not stated
Charlot	May 31	Disabled	St. Johns	Evaporator disabled	Maiden Creek	May 14	Bursting of pipes	Mobile	Considerable
Canadian Seigneur	June 1	Grounded	Near Montreal	Slight	Mary J. Haynie	May 26	Grounded	Albermarle Sound	Heavy
Charlotte Comeau	May 31	Leaking	St. Thomas	Not stated	Maietia	May 27	Grounded	Toledo	Not stated
Creole State	May 31	Disabled	Honolulu	Eng. trouble	Maid of Crete	May 10	Disabled	Swansea	Eng. trouble
Dannedaik	Apr. 26	Disabled	Rotterdam	Mach. trouble	Maresfield	May 15	Disabled	Port Said	Piston broke
Derwent Rive	Apr. 25	Aground	Scheldt River	Not stated	Mergheb	May 13	Struck quay	Lisbon	Bow damaged
Darden	May 6	Disabled	Galveston	Boil. leak	Mount Stewart	May 5	Disabled	Lourenco Marques	Mast damaged
Dannedaik	May 27	Disabled	Philadelphia	Partly submerged	Martha Washington	May 31	Fire	Buenos Aires	Slight
Duchess D'Aosta	May 13	Disabled	Port Said	Steerer trouble	Manchester	May 31	Grounded	Green Bay	Not stated
Dusseldorf	May 21	Grounded	Tripoli	Unknown	Mount Rainier	June 2	Fire	Santa Fe	Total loss
Deranof	May 24	Disabled	At sea	Steerer trouble	Mount Hamilton	June 3	Fire	Miami	Total loss
Ethelstan	Apr. 24	Struck obstacle	Bulk Point Light-ship	Unknown	Nemaha	May 6	Disabled	Bremen	Defective pistons
El Amigo	May 6	Grounded	French Reef	Not stated	Nova Queen	May 20	Strained	Northhead	Lost cargo
Ephrata	May 13	Grounded	Reedy Island	Not stated	Northwestern	May 26	Disabled	New York	Not stated
Edgehill	May 11	Disabled	Chesapeake Beach	Mach. trouble	Nariva	May 7	Disabled	Rotterdam	Not stated
E. A. Sabean	May 8	Waterlogged	Off Galveston	Total loss	Northwestern Bridge	May 28	Disabled	At sea	Mach. trouble
Edward S. Eveleth	May 14	Grounded	Bird Island Flats	Not stated	Nanticoke	May 5	Leaking	Philadelphia	Pumps disabled
Eagle boat No. 19	May 15	In distress	Cape Lookout	Not stated					
Easterner	May 18	Fire	Southeast Ambrose Channel	Not stated					

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING
Octorara	May 13	Grounded	Reedy Island	Not stated	Susquehanna	May 30	Grounded	Boston	Slight
Oronite	May 20	Disabled	Honolulu	Eng. trouble	Sherman	May 28	Disabled	Stapleton	Condenser
Ohelis	May 18	Wrecked	Riding Rocks	Not stated					trouble
Ocmulgee	May 17	Seacocks open	Houston	Not stated	Santa Elisa	June 1	Disabled	New York	Mach.
Oakaloosa	May 22	Disabled	Jacksonville	Pumps broke					trouble
Pipestone County	May 6	Disabled	At sea	Lost. prop	San Juan	May 21	Grounded	Santa Isabel	Not stated
Parismina	May 13	Disabled	Havana	Eng. trouble	Sioux Falls	May 28	Grounded	Epanomi Point	Undamaged
Patella	May 13	Collision	Off Cherbourg	Not stated	Sarnian	May 12	Struck dock	Cincinnati	Shoe damaged
Patris	Apr. 29	Collision	Alexandria	Slight	Tirol	Apr. 29	Collision	Alexandria	Not stated
Persian	May 11	Fire	Baltimore	Burned through to upper deck	Tampa	May 19	Collision	New Orleans	Side damaged
Progress	May 14	Collision	Lambert's Point	Not stated	Tashmoo	May 14	Grounded	Viborg	Tank leak
Permanencia	May 1	Heavy ice	St. Pierre	Heavy	Trevaylor	May 8	Struck bank	Suex Canal	Slight
Panhandle State	May 19	Fire	Ellis Island	Heavy	Torrent	May 4	Collision	Falmouth harbor	Rails damaged
Pro Patria	May 18	Grounded	Sydney Harbor	Not stated	Takada	May 17	Collision	Singapore	Unknown
Pocahontas	May 23	Disabled	Nantucket Shoals	Eng. trouble	Trewhidden	May 20	Disabled	Delagoa Bay	Eccentric rod bent
Panama Maru	May 23	Collision	Galveston	Not stated					
Peraeopolis	May 16	Collision	Marseilles	Ladder broken	U. S. destroy No. 168	May 11	Fouled bell buoy	St. George, S. I.	Prop. damaged
P. Stackhouse	May 21	Collision	Cleveland	Not stated					Prop. blades lost
Phoenix Bridge	May 31	Disabled	West of Gibraltar	Boil. trouble	Utacarbon	May 24	Disabled	Trinidad	
Quebec	May 6	Disabled	Toulon	Mchry. flooded	Vera Kathleen	May 7	Fire	Lourenco Marques	Not stated
Ripon	May 6	Disabled	At sea	Ballast tank leak	Winsome	May 4	Gale	Staten Island	Total loss
Romance	May 14	Disabled	Bermuda	Spanker boom broke	Williamantic	May 7	Water in hold	Newport News	Not stated
Rajore	May 27	Disabled	New York	Steerer damaged	Western King	May 13	Disabled	Halifax	Not stated
Stella	May 3	Disabled	Sulina	Not stated	West Selene	May 21	Disabled	St. Thomas	Lost prop. blade
Salahadj	May 3	Gale	At sea	Considerable	Wien	May 21	Disabled	Copenhagen	Mach. disabled
Susquehanna	May 4	Disabled	Bremen	Boil. trouble	William Palmer	May 16	Disabled	Boston	Mach. trouble
Schuykill Bridge	May 12	Disabled	Halifax	Eng. trouble	Waban	May 23	Disabled	At sea	Boil. leak
Steamtow No. 1	May 14	Collision	Tampico	Bows damaged	Wistoil	May 22	Collision	Montreal	Not stated
Star of Peru	May 6	Disabled	San Francisco	Mast gone	West Harcuvar	May 30	Disabled	Norfolk	Steam joint broke
Sao Paulo	May 8	Sank	Rio Janeiro	Total loss	West Katan	Apr. 29	Grounded	Glasgow	Unknown
Spermina	May 4	Struck pier	Ostend	Slight	Western Hero	May 31	Disabled	Bermuda	Turbine trouble
Shickshinny	May 18	Disabled	Halifax	Boil. trouble	Waltham	May 30	Heavy weather	Jacksonville	Leaking
Santa Paula	May 17	Fire	Talcahuano	Unknown	Yeifuku Maru	Apr. 24	Heavy weather	Antwerp	Deck damaged
Senator	May 27	In distress	East of Cape Henry	Not stated					

Marine Business Statistics Condensed

Soo Canal Report

Freight movement through the Soo canal in May, 1921, shows a decrease when compared with the same period in 1920. The figures are 6,155,063 net tons for 1921 and 8,421,210 net tons for 1920, a decrease of 2,266,147 net tons. The comparison of tonnage figures for the past seven years follows:

	Net tons
May, 1921	6,155,063
May, 1920	8,421,210
May, 1919	10,566,326
May, 1918	11,404,045
May, 1917	8,807,892
May, 1916	12,293,476
May, 1915	7,348,567

Of the total freight carried in May, 5,959,027 tons were handled through the United States canal while 196,036 tons passed through the Canadian canal.

The following tabulation gives the

figures in detail for 1921 and 1920:

EASTBOUND		
	To June 1, 1921	To June 1, 1920
Lumber, M. ft. B. M....	18,562	15,020
Flour, barrels	948,870	658,910
Wheat, bushels	21,202,295	17,772,606
Grain, bushels	19,850,300	17,912,942
Copper, net tons.....	3,360	4,658
Iron ore, net tons.....	2,747,361	6,846,450
Pig iron, net tons.....	.....	.....
Stone, net tons.....	2,725	17,025
General merchandise, net tons	8,362	12,186
Passengers, number	750	523
WESTBOUND		
Coal, soft, net tons.....	2,562,657	582,206
Coal, hard, net tons.....	324,495	212,000
Iron ore, net tons.....	.....	22,064
Mfgd. iron and steel, net tons	4,955	14,774
Salt, net tons.....	10,763	11,190
Oil, net tons.....	115,787	53,046
Stone, net tons.....	74,669	54,820
General merchandise, net tons	92,583	69,757
Passengers, number	592	614
SUMMARY		
Vessel passages, number.	1,885	2,543

Registered tonnage, net..	4,438,078	7,887,787
Freight—		
Eastbound, net tons...	3,926,285	7,938,562
Westbound, net tons..	3,185,909	1,019,857
Total freight, net tons	7,112,194	8,958,419

New Shipping Firms in May Show Decline

The decline in the number of new shipping enterprises in May and April indicates to some extent the depression existing in the shipping industry. Only six new companies with capitalization of \$50,000 or more were organized in May, a decrease of two from April. The authorized capital of the six in the aggregate was \$2,290,000. This compares with \$8,000,000 in April and \$31,083,000 in May, 1920. It was the smallest monthly aggregate since June, 1918, and

Marine Business Statistics Condensed

brought the total for 1921 to \$35,050,000, less than the 1920 monthly average. These figures compiled by the *Journal of Commerce*, New York, for May are:

Atlantic Coast Ports Service Corp., Del.	\$100,000
Interwaterways Line, Del.	1,000,000
Leavitt Lusitania Salvage Co., Del.	100,000
Munalbro Steamship Corp., Del.	500,000
Seven Seas Steamship Co., Del.	390,000
Seaport Navigation Co., Mc.	300,000

Total \$2,290,000

The April incorporations were:

American Transatlantic Line, Del.	\$500,000
Calumet Steamship Co., Del.	200,000
Edlerman's Wilson Line, New York, Del.	100,000
First National Shipping Corp., N. J.	5,000,000
Grace Line, New York	100,000
Houston-Tampico SS. Co., Del.	1,000,000
Importers Steamship Corp., Del.	1,000,000
Tristate River Navigation Co., Ga.	100,000

Total \$8,000,000

May Ore Shipments

Shipments of iron ore from the Lake Superior district last month were 2,594,027 tons, a decrease of 4,382,058 tons over the same month last year. Detailed figures follow:

Port	May, 1921	To June 1, 1921
Escanaba	72,048	72,048
Marquette	13,985	13,985
Ashland	208,390	217,539
Superior	730,708	842,556
Duluth	1,199,457	1,226,888
Two Harbors	369,439	397,222
Total	2,594,027	2,770,238
1921 decrease	4,382,058	4,436,701

Lake Erie Receipts

Out of a total of 2,594,027 tons shipped from upper lake ports in May, Lake Erie ports received 1,656,397 tons, as shown by the figures compiled by MARINE REVIEW. The balance on dock June 1 was 8,083,839 against 6,312,575 tons on June 1, 1920. Detailed figures are:

Port	Gross tons
Buffalo and Port Colborne	81,073
Erie	19,040
Conneaut	558,447
Ashtabula	328,043
Fairport	161,077
Cleveland	181,432
Lorain	229,283
Huron	88,415
Toledo	9,587
Detroit	.....
Total	1,656,397

Lake Michigan Receipts

Receipts of ore at Lake Michigan ports for May were 498,313 gross tons as shown in the following record by ports:

Port	Gross tons
South Chicago, Ill.	289,929
East Jordan, Mich.	.....
Boyne City, Mich.	.....
Milwaukee	.....
Indiana Harbor, Ind.	55,025
Gary, Ind.	153,359
Total	498,313

Panama Canal Traffic Is Smaller in April

Traffic through the Panama canal in April was less than in March. This was true not only of the tonnage carried in the vessels making passage but was true also of their number and tonnage, respectively, in both directions. The number of commercial vessels making passage in April was 227 as against 255 in March and the tonnage carried in the last month reported was 955,503 as compared with 1,112,818 tons in the earlier period.

March statistics of the canal passages are as follows:

ATLANTIC TO PACIFIC		Gross tons
Oil		
Crude	158,307	
Refined, various	61,469	219,776
Manufactured goods:		
Iron and steel	70,301	
Machinery	16,536	
Railroad equipment	3,369	
Other	11,146	101,352
Coal and coke		87,945
Sugar		38,710
Sulphur		12,350
Cotton, raw		8,343
Cement		7,056
Tobacco		3,885
General and mixed		157,162
Total cargo, Atlantic to Pac.		636,579

PACIFIC TO ATLANTIC		Gross tons
Nitrate	141,026	
Wheat	57,764	
Oils, refined, various	24,402	
Lumber	23,661	
Barley	19,908	
Copper	13,304	
Others	2,911	16,215
Flour		11,726
Cold storage and food products		22,071
Sugar		8,979
Wool		3,615
Corn		5,191
General and mixed		123,426
Total, Pacific to Atlantic		447,984

TOTAL TRAFFIC THROUGH THE CANAL, MARCH, 1921			
	Atl. to Pacific	Pac. to Atlantic	Total
Commercial ships	140	115	255
United States government ships	23	14	37
Launches (under 10 tons)	6	5	11
Total vessels and craft	169	134	305
Tonnage of above ships:			
Commercial (Panama canal net)	613,591	499,227	1,112,818
Government (Panama canal net)	19,759	.....	19,759
Government (displacement)*	32,745	38,211	70,956
Launches (Panama canal net)	29	18	47
(* Panama canal net tonnage unavailable.)			

The April figures of the canal business are as follows:

ATLANTIC TO PACIFIC		Gross tons
Oil, crude	112,267	
Oil, refined	48,126	160,383
Manufactured goods:		
Iron and steel	78,645	
Machinery and railroad equipment	16,169	
Other	7,205	102,019
Coal and coke		39,915
Sugar		25,216
Metals		15,396
Sulphur		7,850
Cement		5,412

Tobacco	3,880
General and other	140,730
Total, Atlantic to Pacific	500,801

PACIFIC TO ATLANTIC		Gross tons
Nitrates	118,729	
Wheat	39,108	
Cold storage and food products	43,924	
Lumber	23,339	
Oil, refined	20,608	
Flour	16,384	
Wool	17,549	
Ores	14,752	
Metals	13,478	
Canned goods	12,729	
Barley	12,152	
Sugar	8,379	
Other and general	65,681	
Total, Pacific to Atlantic	406,812	

TRAFFIC THROUGH THE CANAL DURING APRIL, 1921			
	Atl. to Pacific	Pac. to Atlantic	Total
Commercial vessels.....	118	109	227
U. S. government vessels	15	12	27
Launches (under 10 tons)	5	4	9
Total vessels and craft.....	138	125	263
Tonnage of above vessels:			
Panama Canal net tonnage:			
Commercial vessels	492,506	462,997	955,503
Government vessels	18,854	6,983	25,087
Launches	24	6	30
Displacement tonnage: (*)			
Government vessels	20,130	4,396	24,526
(*) P. C. Net tonnage unavailable.			

Canadian Canals' Report

Canal traffic in Canada, developing with the opening of the waterways at various times in April, shows a healthy increase over April of a year ago, according to the transportation division of the bureau of statistics in the dominion department of trade and commerce.

The April figures were:

SAULT STE. MARIE CANAL		April, 1921
No. of vessels		404
Vessel tonnage		104,328
Wheat, tons		25,375
Coal, soft, tons		.....
Total cargoes, tons		50,405

ST. LAWRENCE CANAL		April, 1921
No. of vessels		235
Vessel tonnage		116,958
Wheat, tons		9,350
Coal, soft, tons		27,550
Total cargoes, tons		81,848

TRENT CANAL		April, 1921
No. of vessels		37
Vessel tonnage		1,630
No. of passengers		.....
Total cargoes, tons		93

OTTAWA CANAL		April, 1921
No. of vessels		41
Vessel tonnage		7,617
Total cargoes, tons		4,632

WELLAND CANAL		April, 1921
No. of vessels		146
Vessel tonnage		119,860
Wheat, bushels		18,908
Coal, soft, tons		29,900
Total cargoes, tons		101,753

RIDEAU CANAL		April, 1921
Will not open.		

CHAMBLY CANAL		April, 1921
No. of vessels		75
Vessel tonnage		8,993
Total cargoes, tons		6,510

ST. PETERS CANAL		April, 1921
No. of vessels		20
Vessel tonnage		1,181
Total cargoes, tons		1,160

ST. ANDREWS CANAL		April, 1921
No report.		

MURRAY CANAL		April, 1921
No. of vessels		18
Vessel tonnage		3,656
Total cargoes, tons		1,165

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

EFFECTIVE as the marine strike appeared to be, especially early in May, traffic at nearly all ports about held its own with April. In several instances arrivals exceeded the earlier month's total while, as might be expected, departures in the main were smaller at nearly all ports. The decline in departures, however, was so small in the aggregate that, with several exceptions, the strike appears to have been of minor importance. Judging from the entrances, which were large, New York traffic would have shown a decided improvement during May except for the engineers' strike. Despite the labor troubles the clearances did not fall much below the normal. The number of ships clearing was 72 short of the number clearing the month before, the totals inclusive of ships of all nationalities. In all some 129 American vessels cleared during the month, 82 less than the number clearing New York during April.

Evidences of the breaking of the strike were apparent before the end of May. During the first half of the month only 47 American ships sailed from New York, while during the next five days, May 16 to 25, a total of 55 American vessels got away.

Foreign ship clearances at Philadelphia during May were equal to foreign clearances during April. The strike held up American vessels and diverted traffic to foreign ships. Reduced traffic for the month was only slightly more than 10 per cent under April. The number of vessels entering and clearing in ballast showed no change. Striking engineers increased their aggressive tactics about June 1 after it was believed the owners were winning out. But so far as the cargoes offered are concerned, the port traffic has been hampered only slightly.

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
May, 1921.....	110	295,617	70	178,464
April	105	255,249	79	209,854
March	102	306,512	87	242,606
February	104	285,369	75	221,402
January	84	250,233	68	217,281
December, 1920..	116	340,133	112	235,821
November	126	338,562	123	350,385
October	119	328,074	165	465,800
September	144	385,676	153	467,357
August	153	377,695	156	438,230
July	104	250,104	93	272,913
June	121	286,061	79	196,787
May	129	316,246	126	315,997

New York

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
May, 1921.....	425	1,454,033	366	1,328,643
April	410	1,453,056	438	1,509,353
March	455	1,574,526	448	1,539,885
February	424	1,407,133	374	1,315,556
January	455	1,437,725	414	1,433,564
December, 1920..	516	1,732,485	518	1,802,929
November	495	1,741,786	482	1,691,683
October	526	1,763,904	514	1,719,103
September	506	1,728,266	493	1,574,228
August	537	1,634,719	499	1,649,416
July	510	1,627,721	462	1,518,406
June	508	1,545,144	436	1,364,297
May	444	1,343,052	390	1,258,996

Portland, Me.

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
April, 1921.....	17	54,804	19	64,310
March	24	75,529	25	80,107
February	20	66,422	21	73,581
January	34	93,933	28	86,559
December, 1920..	36	96,281	31	107,567
November	37	61,804	16	23,282
October	15	22,240	13	19,862
September	14	29,993	5	12,661
August	31	42,464	14	8,626
July	19	27,314	9	9,022
June	29	45,670	12	34,886
May	25	44,634	17	30,537
April	17	46,003	24	69,688

Boston

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
May, 1921.....	122	190,148	87	98,008
April	101	217,080	71	133,952
March	99	306,454	49	113,184
February	74	260,502	46	119,847
January	72	175,052	50	125,904
December, 1920..	66	178,656	51	128,439
November	79	193,433	52	107,112
October	82	182,028	62	116,007
September	99	210,496	75	123,045
August	133	235,706	83	124,643
July	111	212,954	87	124,699
June	120	198,136	88	124,594
May	85	124,670	81	87,436

Mobile

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
May, 1921.....	43	67,627	45	71,756
April	96	249,996	76	150,776
March	79	140,798	56	82,898
February	58	105,040	47	89,647
January	68	94,273	63	78,109
December, 1920..	97	147,575	74	122,293
November	73	91,814	54	74,252
October	64	98,107	81	128,540
September	55	102,589	60	111,593
August	77	118,308	71	127,201
July	74	117,421	68	101,845
June	72	100,886	65	92,090
May	64	105,233	79	109,204

Savannah

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
May, 1921.....	5	9,507	16	36,377
April	17	40,418	12	25,543
March	13	19,924	14	29,618
February	9	14,493	15	32,475
January	11	21,591	20	38,179
December, 1920..	22	45,085	26	36,110
November	32	61,216	18	28,108
October	22	35,837	33	55,632
September	21	43,316	21	46,881
August	15	22,562	16	31,695
July	16	29,561	14	23,679
June	20	41,844	21	39,280
May	16	29,270	17	36,425

San Francisco

(Inclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
May, 1921.....	271	594,409	164	426,255
April	377	607,559	452	703,717
March	335	645,435	341	611,575
February	305	594,636	297	548,103
January	356	585,689	330	566,201
December, 1920..	388	606,666	359	561,188
November	393	640,474	399	633,274
October	431	641,970	421	639,323
September	399	549,468	391	566,048
August	427	653,372	401	604,069
July	393	589,656	411	660,377
June	396	587,499	383	601,054
May	418	579,914	438	622,608

Key West

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
May, 1921.....	100	104,326	104	103,571
April	115	117,586	111	114,748
March	112	107,736	108	107,083
February	124	118,950	120	119,241
January	128	146,679	127	142,474
December, 1920..	121	102,611	121	97,733
November	103	90,374	98	82,126
October	84	92,944	79	80,681
September	97	87,017	95	89,030
August	98	91,442	102	87,420
July	90	83,862	89	83,374
June	94	85,776	95	84,583
May	98	85,982	99	84,600

Baltimore

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
May, 1921.....	109	341,731	112	341,381
April	114	320,195	119	351,950
March	111	320,238	107	316,536
February	112	380,602	93	292,881
January	131	401,511	112	344,480
To foreign ports direct—				
December, 1920..	92	264,142	113	329,320
November	109	316,743	145	425,493
October	134	372,463	188	545,974
September	120	353,734	143	409,839
August	103	282,370	169	473,160
July	140	401,116	155	454,643
June	143	411,978	183	528,270
May	121	360,192	153	434,472

Los Angeles

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921.....	39	99,455	33	94,380
February	74	97,252	60	93,544
January	60	111,882	86	64,844
December, 1920..	74	60,333	56	61,211
November	69	89,143	79	91,763
October	65	72,101	85	104,304
September	27	70,989	34	77,330
August	20	44,580	34	89,180
July	15	40,218	23	62,737
June	28	41,275	23	44,289
May	28	47,151	29	31,154
April	24	30,731	21	36,769
March	46	38,821	45	30,825

Seattle

Deep sea arrivals Deep sea departures

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
April, 1921.....	143	339,192	163	370,070
March	149	372,824	144	369,568
February	103	295,144	101	272,136
January	131	312,072	134	344,877
December, 1920..	205	323,744	186	302,051
November	256	348,452	228	337,890
October	359	347,412	314	366,669
September	422	380,582	323	345,535
August	438	371,148	393	368,327
July	417	441,626	461	444,607
June	353	332,666	433	346,489
May	376	328,594	392	324,932
April	328	331,921	348	334,540

Marine News in a Personal Way

Intimate Gossip About What Leaders in the
Maritime World Are Doing

NORMAN WATERHOUSE and ROBERT C. HILL have organized Waterhouse-Hill, Inc., Seattle, for the purpose of catering to the traveling and tourist public and of conducting a general marine and insurance business. The members are two young business men widely known in north Pacific shipping circles. Norman Waterhouse, president is a brother of Frank Waterhouse head of the shipping and operating firm of Frank Waterhouse & Co., Robert C. Hill, secretary-treasurer, is a newspaper man of long experience who for 17 years has specialized in marine matters.

The new firm has opened a ground floor office in the heart of Seattle's hotel district where a large number of foreign and domestic steamship lines are represented as well as tourist agencies, marine, fire and accident insurance companies and other services associated with shipping. The object of the office is to furnish service to travelers bound for any part of the world whether it be transportation, insurance or foreign money orders. In addition, the office is headquarters for a number of Puget Sound tourist hotels and resorts.

Mr. Waterhouse has long specialized in marine and fire insurance at Seattle and has a wide experience and acquaintance. Mr. Hill is also known in shipping circles from California to Alaska and has friends in foreign marine centers. He gained his early newspaper experience in Minneapolis, later at Portland, Oreg., whence he was called to Tacoma, Wash., as marine editor of *The Ledger*. Following a trip by water around the world he was marine editor of the *Seattle Post-Intelligencer* and later edited *Railway and Marine News*, Seattle, for two years. Since then he spent nine and a half years as secretary of the Merchants Exchange of Seattle where his varied experience in the newspaper, business and shipping fields aided him in bringing that organization to the front as one of Seattle's leading semipublic bodies. He will specialize in his new association in chartering vessels and booking freight by water.

GEORGE SEELEY, Galveston, Tex., now is president of the United Steamship Co., Galveston, a subsidiary of the Munson Steamship lines which have

had control since the death of H. Mosle, president of the United company. GEORGE G. MCINTOSH, passenger traffic manager of the Munson lines, is vice president and general manager of the United Steamship line. He will divide his time between New York and Galveston.

A. H. BEISEL, for many years in the freight and passenger departments of the Cunard line, now is traveling pas-



ROBERT C. HILL
Secretary-Treasurer of New Marine Firm of
Waterhouse-Hill, Inc., Seattle

senger and freight agent in New England, middle and southern states for the Royal Mail steam packet line.

ANDREW B. SIDES, of the Eastern Steamship Co., Inc., has recently been elected vice president of the company.

G. F. PARTRICK is now a member of the A. C. Elliott Co., New York, having sold his interest in the Atlantic Chartering Co., that city.

A. L. BECKER now is acting as consulting marine engineer for shipyards around San Francisco. Until recently he was manager of the Shaw-Batcher Ship works, South San Francisco, which has discontinued building ships. Mr.

Becker's headquarters are in the Balfour building, San Francisco.

T. PARK HAY has been placed in charge of offices opened by the division of operations, United States shipping board, in the Liberty Central Trust building, St. Louis.

E. E. JOHNSON, formerly Admiral line agent at Kobe, Japan, has returned and has been appointed temporarily as agent at Portland, Oreg., succeeding Frank J. O'Connor, who is ill.

R. J. MCKEE now is manager of the Southern Stevedore & Lighterage Co., New Orleans. Formerly he was supervising stevedore of the J. H. W. Steele Co., New Orleans.

ARTHUR T. HENDERSON, for more than 29 years associated with the French line in the United States, has been appointed passenger and traffic manager. He succeeds the late Maurice Kozminski, with headquarters in New York.

CAPT. H. L. COLBETH, superintendent of the Cape Cod canal, was elected trustee, and CAPT. FRAZIER L. SEARS, Dennis, Mass., was elected to membership at the semiannual meeting of the Boston Marine society, held recently.

A. W. KNOWLES, one of the organizers of the Export Steamship Corp., now is with the Ottoman-American Line, 42 Broadway, New York. With him is C. E. MALINS, also formerly with the Export Steamship Corp.

S. P. FROOD has been made manager of advertising and publicity for the Los Angeles Shipbuilding & Dry Dock Co., San Pedro, Cal., taking over the editorship of *The Chart*, the company's house organ, now on a monthly basis.

J. A. WILSON, for many years a chief engineer in the north Atlantic passenger trade and traveling engineer for the Babcock & Wilcox Co., has been made deputy chief surveyor in Syndicate A of the American Marine Insurance Syndicate. He has been surveyor and previously had been general superintendent of the installation of machinery and boilers at Hog Island.

Marine News in a Personal Way

Intimate Gossip About What Leaders in the
Maritime World Are Doing

FRANKLIN D. MOONEY, who was elected president of the Atlantic, Gulf & West Indies Steamship lines April 28, 1921, and the following month elected president of the Atlantic, Gulf Oil Corp., has had long association in the coastwise steamship business. Mr. Mooney was born in Elizabeth, N. J., on Oct. 24, 1873, and was educated in the local schools.

At the age of 17 Mr. Mooney entered the employ of Miller, Bull & Co., ship brokers, then located on Beaver street, New York. The firm was in the beginning the agents for the New York & Porto Rico Steamship Co. In 1900 that steamship company took over its own agency business, appointing Henry T. Knowlton general manager. When that step was taken Mr. Mooney went over to the steamship company under Mr. Knowlton and when Mr. Knowlton died in April, 1903, Mr. Mooney succeeded him as general manager. Later Mr. Mooney became treasurer, vice president and then president and general manager of the New York & Porto Rico line, which position he still holds.

The various steamship lines forming the A. G. W. I. group were brought together in one holding company in 1907, some time after which Mr. Mooney was made director of the holding company and a director in the various subsidiary companies. The subsidiaries are the Porto Rico, Clyde, Mallory, Ward and Southern lines and various terminal companies.

In the year 1918 the A. G. W. I. decided to go into the oil business and extensive plans were announced in 1919. It was then that the Atlantic, Gulf Oil Corp. was organized, this company taking possession of extensive oil properties in Mexico.

As an adjunct to the oil business the A. G. W. I. Steamship lines began building up a tanker fleet. This fleet numbers 14 tankers with a total deadweight of 172,000 tons. Furthermore, the group owns 65 per cent interest in the A. G. W. I. Petroleum Corp., an English concern, which has property on the Southampton waters. In addition, extensive plans were drafted to establish the oil business in France. Owing to the general industrial depression, however, the French plans have been aban-

doned and the A. G. W. I. undertook a reorganization and retrenchment. It was at this point Mr. Mooney came to the front and was placed in charge of the properties.

* * *

FRANK WATERHOUSE, prominent steamship operator, has been named chairman of the executive committee which is arranging plans for the entertainment of 1000 delegates expected from all parts of the world to attend the annual



FRANKLIN D. MOONEY
New President of the Atlantic, Gulf & West
Indies Steamship Co.

convention at Seattle of the American Association of Port Authorities. The sessions will be held in October.

* * *

CAPT. OSMYN BERRY, assistant inspector of hulls, at Boston, recently was appointed local inspector at Portland, Me. He has been connected with the Boston district for several years.

* * *

T. P. HUNTER, formerly with the United Transportation Co., which has given up its New York office, has joined the staff of G. L. Douglas, Inc., New York, freight and insurance broker.

* * *

David W. Niven is named manager of the marine sales of the General Electric Co., Schenectady, N. Y., in an announcement just made by vice president

J. R. Lovejoy. In his new position, Mr. Niven will direct sales to the federal government for naval and other purposes. He has been with the General Electric Co. for 21 years and in the marine department since 1910. He is a native of Scotland, and before coming to this country was identified with Siemens Bros. in London.

* * *

EDWIN THORNE, secretary of the New York Dock Co., New York, was made a member of the executive committee at a meeting in which all officers and directors were re-elected.

* * *

J. A. WELLS, who has been in the traffic department of Gaston, Williams & Wigmore, Inc., has become associated in the same capacity with the Williams Steamship Co., Inc., New York.

* * *

H. W. ROSS, recently vice president of the chartering firm of Thorndyke-Trenholme, Inc., has severed his connection with that company and has opened general chartering offices at Seattle.

* * *

T. FRANK ROGERS has joined Garcia & Diaz, New York, identified with the Spanish trade, as manager of their freight traffic. He formerly was with the Ocean Transportation Co., New York.

* * *

FREDERICK BRANDT has joined the staff of David C. Reid, Inc., New York, doing a general charter business. Mr. Brandt for about 20 years was with Ward & Co and more recently with the Potter Transportation Co.

* * *

FRANK R. DOTY, until recently president of Frank R. Doty & Co. and for many years with the Judson Freight Forwarding Co., has been made export manager of F. William Gertzen Co., Inc., 70 West street, New York, custom house broker, forwarding agent and passenger steamship agent.

* * *

PAUL GENDELL, employment manager of the New York Shipbuilding Corp., Camden, N. J., and chairman of the employment committee of the Atlantic Coast Shipbuilders' association, has been made a member of the executive committee of the employment managers' section of the Philadelphia association for the discussion of employment problems.

Yards Turn to Nonseagoing Work

Shipbuilding Plants in East Find Employment in Constructing Harbor Craft — Ship Prices at Bottom

DECLINING shipbuilding activities have been noted all over the world, with the possible exception of Holland. Today, according to reports, Holland stands third among the shipbuilding nations following England and the United States. On May 1, American yards held contracts to build 179 steel ships of 645,224 gross tons. This is exclusive of contracts held with the government or with the Emergency Fleet corporation. Such contracts today figure around half a million tons. At the current rate of production, it is estimated the output of the American yards this year will be about 2,250,000 gross tons, as compared with an output of 3,735,000 tons last year. The significant feature of the shipbuilding outlook is that American yards are giving more and more attention to other than seagoing tonnage. Out of the 99 vessels built during April last, 81 were nonseagoing, although the gross tonnage of the seagoing vessels constituted the bulk of the construction when measured by tons.

The most active yards on the Atlantic are the Bethlehem Shipbuilding Corp., Newport News Shipbuilding & Dry Dock Co., New York Shipbuilding Corp., Oscar Daniels Co., Standard Shipbuilding Co., Sun Shipbuilding Co., and the Texas Steamship Co. During the first half of May, two new steamers were added to the shipping board fleet, while a 10,000-ton tanker was launched for government account. At that time, 46 ships remained to be delivered to the board before the Emergency Fleet contracts will have come to an end. Thirty three steamers were then on the ways and 13 fitting out in wet basins.

See End of Decline

Evidence exists that many think a bottom market for ships has been established. That is a conviction which undoubtedly led the shipping board to make a further attempt to sell some of its tonnage. Bids on three steel cargo steamers were invited by the board on May 31, following which it was learned another attempt will be made to dispose of the wooden ships and some of the small steel ships to foreigners. During the past month or so, several bargains in the tonnage field have been quietly picked up. These activities have been noticed among the more shrewd steamship holders who are of the opinion that tonnage cannot become any cheaper than it is today.

That there is a changed sentiment re-

garding the ownership of steamers was also noticeable in the few new contracts which came into the market during the past month. The imperial Japanese government let a contract with the New York Shipbuilding Corp. for a 20,000-ton fueling ship for the Japanese navy. The contract calls for the construction of a unique type of vessel, a combination coal and oil supply ship. The design calls for a length on the water line of 496 feet, with a beam of 67 feet. The vessel will be electrically driven, the equipment being furnished by the General Electric Co., and will have twin screws with a total of 7500 shaft horsepower which will give the ship, loaded, a speed of 15 knots. The vessel will have both oil and coal bunkers. A feature will be the installation of an antitorpedo boat battery.

Plan To Build Vessels

The Clyde Steamship Co. is reported to be planning for the construction of a new twin screw steamer which will be 20 feet longer than the *LENAPE*, now the largest in its fleet. When completed it will be placed in the New York-Jacksonville service. According to A. O. Pegg, superintending engineer of the Union Oil Co., that company expects to build four new tankers, if it is successful in selling the three smaller tankers now in its fleet. Three of the new ships are to have a deadweight of 12,500 tons, and one will have a capacity of 7500 tons. Preliminary plans for the construction of two 1000-ton deadweight motorships are being prepared by Messrs. Seabury & de Zafra, Inc., 150 Nassau street, New York.

A more active interest in shipping has been manifested by the American Sugar Refining Co., which created some time back the American Sugar Transit Corp. The *DIXIANA*, the combination sugar tanker and dry cargo carrier of 6300 tons deadweight, was launched last month for this corporation from the yard of the Staten Island Shipbuilding Co.

The American Car & Foundry Co., which builds and repairs wooden boats at its Wilmington, Del., plant, has been constructing some sand barges for the Charles Warner Co., a large Wilmington builders' supply concern.

The Norwegian-American line's new 10,000-ton tanker *FOLDENFJORD* was launched during May at the Sun Shipbuilding Co.'s yard, Chester, Pa. The *FOLDENFJORD* is the third Norwegian-American tank steamer to leave the ways in the past six months. The Sun yard

has two launchings and three deliveries scheduled for June.

The Rice Bros. Corp., steel and wood shipbuilder of East Boothbay, Me., is finishing a number of one-design sailing yachts. This completes all the contracts it has on hand. The East Coast shipyard at Boothbay, Me., is again back in the hands of its original owner, Irving W. Reed, from whom it was purchased by the East Coast Ship Co. It is said he will soon start building small boats as he did in years past.

The Merchant Shipbuilding Corp., has gone in for general engineering in order to overcome the lack of orders for ship construction and marine engineering. The Submarine Boat Corp., Newark Bay, N. J., is turning its attention to steel fabrication for land work, its initial contract being one for 1200 tons.

Taking advantage of the shipping slump, the shipping board is attempting to make some improvements on a few of its freighters. An improved turbine, it is understood, will be installed on some Hog Island ships. It is also said that the General Electric Co. is planning to install an improved system of electric propulsion on the last seven of the twelve freighters it is equipping for the shipping board. The auxiliaries will be further electrified and provision will be made to utilize the exhaust steam, for which purpose superheaters will be installed. So far the *ECLIPSE*, *INVINCIBLE* and *ARCHER* have been equipped.

Install Electric Drive

The Todd Shipbuilding Corp. has been awarded the contract by the shipping board for installing the electric drive on the *VICTORIOUS*. This work will be done at the Tebo Yacht Basin, Brooklyn. The contract was awarded on a lump sum basis of \$95,530 which is to include voyage repairs and betterments.

The *VICTORIOUS* is the fifth of the twelve 12,000-ton freighters to be equipped with electric drive by the General Electric Co. for the shipping board. The others are the *INVINCIBLE* and *ECLIPSE*, now in service, the *ARCHER*, ready for sea trials at the present time, and the *INDEPENDENCE*, which will be ready for sea tests the latter part of July.

Delivery has been made by the Great Lakes Engineering Works, River Rouge, Mich., of the yacht *DELPHINE*, built for the estate of Horace E. Dodge.

Repairs Keep Pacific Yards Busy

Damage to the shipping board freighter *WEST HARTLAND* is being repaired by Todd Dry Docks, Inc., Seattle, on a contract bid of \$65,000. The work is now 75 per cent complete and the vessel will be returned to her operators during June. The *WEST HARTLAND* had her bow battered in and twisted on April 1 when she rammed and sank the Admiral line steamer *GOVERNOR* off Port Townsend, Wash. The work was awarded to the Seattle repair plant following severe competition and the contract is being carried forward with dispatch.

Todd Dry Docks, Inc., are also doing extensive overhauling on the shipping board freighter *WEST IVIS* which has been on the Oriental route for about a year. This vessel is being docked and painted and in addition is having repairs made to tail shaft and propeller. The steamer *WEST CANON* has been substituted for the *WEST IVIS* on the run to Manila via ports. The steamship *CROSS KEYS* has just been overhauled at this yard.

The St. Helens Shipbuilding Co., St. Helens, Oreg., has completed a contract for 60 pontoons for the war department. Under the terms of the contract the work was done in 20 days.

After stranding near Port Townsend, the W. R. Grace & Co. steamer *SANTA ALICIA* was lifted at Todd Dry Docks, Inc., for survey and examination. It was found that the vessel was uninjured although she remained hard and fast for more than 24 hours.

General drydocking and repair work is keeping a large force busy at the Puget Sound navy yard. The destroyers *MEADE*, *MORRIS*, *TINGEY*, *BAILEY* and *THORNTON* have recently been docked while several other naval craft have been overhauled.

The steel shipbuilding program on the Columbia and Willamette rivers was completed on May 19 when the 12,000-ton tanker *SWIFTWIND* was launched from the ways of the Northwest Bridge & Iron Co. The *SWIFTWIND* is the seventh and last tanker to be built by the Portland company for the Swiftsure Oil Transportation Co. and the forty-fourth steel vessel built at this plant.

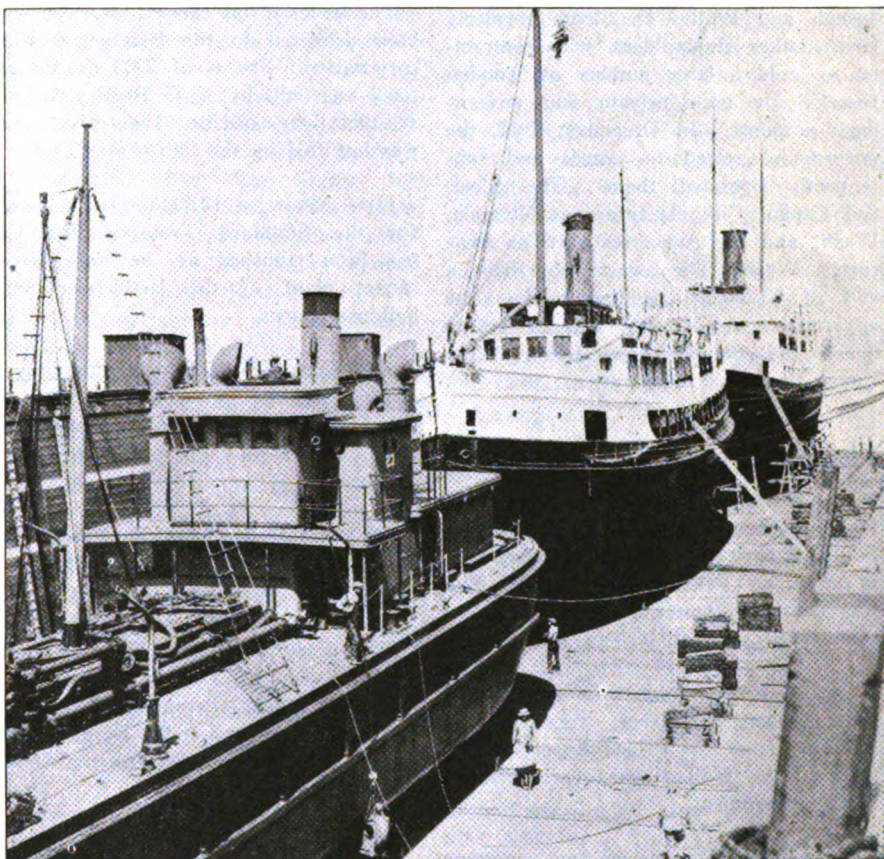
The *BOHEMIAN CLUB*, 10,000-ton tanker named in honor of the San Francisco organization in recognition of the courtesies extended by the club to naval officers during the war, was launched at Oakland, Cal., May 14. She was constructed for the shipping board.

J. J. Coughlin, president of the Coughlin Shipbuilding Co., Vancouver, B. C., has returned from Ottawa, Ont., optimistic about the future of shipbuilding in British Columbia. He gave the opinion that in two years the present surplus of tonnage will be absorbed and additional construction contracts will be available.

Named in honor of the 16th battalion, the steel steamer *CANADIAN SCOTTISH*, 8390 tons, was launched by the Wallace company at the Prince Rupert, B. C., yards May 16. This is the first vessel built at the Prince Rupert plant. The *CANADIAN THRESHER* is on the ways

congratulatory telegram from President Harding. With the *OMAHA* and *MILWAUKEE*, previously launched, the *CINCINNATI* will be completed at the Tacoma yards where a large force of men will be employed about a year finishing the contract. The builders established a splendid record on the *CINCINNATI*, the launching taking place 11 months and 24 days following the laying of the keel.

Following extended litigation, George H. Walker, Seattle attorney, has been



THREE VESSELS IN DRYDOCK AT ONE TIME

Repair work is keeping many yards busy as shown by this view of the 12,000-ton floating drydock of the Los Angeles Shipbuilding & Dry Dock Co., San Pedro, Cal. Three vessels are undergoing repair at the same time. From left to right, they are the U. S. S. oil barge No. 23, an auxiliary of the Pacific fleet, and the passenger liners *HERMOSA* and *CABRILLO* of the Catalina island fleet

and will be launched later. The present operators announce that the yard will be permanent.

Extensive repairs, totaling about \$60,000, to the freighter *EDWARD LUCKENRACH*, will be made by the Los Angeles Shipbuilding & Drydock Co.

In the presence of a distinguished company, including William H. Todd and party of New York, the naval cruiser *CINCINNATI* was launched on May 23 by the Todd Drydock & Construction Corp., Tacoma, Wash. The *CINCINNATI* is the third and last of three vessels of her type ordered by the navy. Mrs. Charles E. Tudor, Cincinnati, sponsored the vessel, christening the hull with water from the Ohio river. A feature of the event was a

appointed by the United States district court as receiver for the Sloan Shipyards Corp., the Capital City Iron Works and the Anacortes Shipbuilding Co. This followed a petition by the government to have the property disposed of in settlement of suits pending in the federal court. The receiver has filed a bond of \$80,000.

In appointing the receiver, Judge Neterer stated that affidavits on file show that the shipyards with their valuable machinery and supplies are rapidly losing their value. He added that the appointment of a receiver will not affect the suits already pending as the proceeds will be turned over to the proper parties when the suits are determined. Affidavits by J. D. Kuhne,

manager, state that prospective purchasers are wary of buying the machinery and equipment because of the undetermined ownership and also that the yards are rapidly deteriorating in value because of lack of authority to provide for proper care. Taxes amounting to \$5333 are shown to be owing while wages and rentals amounting to more than \$10,000 are unpaid. In Thurston county, a judgment of \$1932 against the Capital City Iron Works is unsatisfied.

The Sloan yards were organized by Joseph and Phillip D. Sloan, formerly Great Lakes shipbuilders, who contracted to build a large number of wooden vessels, for both private and government accounts. In December, 1917, the government seized the yards and subsequently operated them. The Sloan and Capital City plants are at Olympia, Wash., and the Anacortes yard at Anacortes, Wash. The owners now have a suit of \$3,200,000 pending against the government for alleged loss of profits due to the commandeering action of the Emergency Fleet corporation.

Launchings—Deliveries

The HAVENSTEIN, the fifth of 12 large freighters being built for Hugo Stinnes' South American service, was launched in May at Fehnsburg, Germany. She was named in honor of Rudolf Havenstein, head of the German reichsbank.

CANADIAN SCOTTISH, originally named the CANADIAN REAPER, recently was launched from the Prince Rupert, B. C., plant of the Wallace yard for the Canadian government.

The LADY KINDERSLEY, an auxiliary schooner, and four smaller schooners built for the Hudson's Bay Co. by the British Columbia Marine Engineers & Shipbuilders, Vancouver, B. C., recently were delivered.

GLENAFTON, a 3000-ton, deadweight, lake freighter for the Glen Transportation Co., has been launched by the Port Arthur Shipbuilding Co., Port Arthur, Ont., and will be delivered in June.

A cargo vessel of 6400 tons has been launched by Canadian Vickers, Montreal, and delivered to her owner, a Norwegian company.

The MANUKAI, a 14,000-ton freighter built by the Moore Shipbuilding Co., Cal., has been delivered to her owner, the Matson Navigation Co.

The BUCKEYE STATE, a 13,000-dead-

weight ton liner, built by the Bethlehem Shipbuilding Corp. at its Sparrows Point, Md. yard, has been delivered to the Emergency Fleet corporation.

The Northwest Steel Co., Portland, Oreg., has delivered the 12,000-ton tanker, SWIFTEAGLE, to the Swiftsure Transportation Co.

The Anglo-Saxon tanker, ARCADE, 8400 tons, recently was delivered by the Union Construction Co., Oakland, Cal.

The concrete oil carrier, MOFFITT, has been delivered to the Emergency Fleet corporation. She is of 7300 deadweight tons, was built by A. C. Bentley & Sons at their Jacksonville, Fla., plant, and was outfitted by the California Brick Co.

JAVA ARROW, a 12,600-ton tanker built for the Standard Transportation Co., has been launched at the Fore River, Mass., plant of the Bethlehem Shipbuilding Corp.

The Consolidated Shipbuilding Corp., Morris Heights, New York city, has delivered to A. Y. Gowen his new SPEEDY JACKS, a 98-foot twin screw motor cruiser.

The Norwegian-American line's oil tanker FOLDENFJORD recently was launched by Sun Shipbuilding Co., Chester, Pa.

The destroyer tender DOBBIN, named after James C. Dobbin, secretary of the navy under President Pierce, recently was launched at the League Island navy yard, Philadelphia, for the United States government.

PUENTE, a 10,000-ton tanker for the Union Oil Co., has been launched at the Chester, Pa., yard of the Merchant Shipbuilding Corp. She is 424 feet long, 58 feet beam and 25 feet 5 inches loaded draft, with triple expansion engines and Scotch boilers and is designed for 10½ knots.

T. J. WILLIAMS, a 11,900-ton tanker building for the Standard Oil Co., recently was launched by the Oscar Daniels Co., Tampa, Fla.

The Union plant of the Bethlehem Shipbuilding Corp., at San Francisco, recently launched the steamers HAMER and HAMMAC and delivered the steamer HAMBRO, the destroyers HULL and MACDONOUGH.

The Sparrows Point plant of the Bethlehem Shipbuilding Corp. has completed the AGWIPOND, a 12,600-ton tanker for the Atlantic, Gulf & West Indies Co., and the 8400-ton tankers

EMILE DEUTSCH DE LA MEURTHE and HENRY DE LA MEURTHE for the Lux Navigation Co.

The American Sugar Transit Corp.'s combination tanker and dry cargo steamer DIXIANO recently was launched at the Mariners' Harbor plant of the Staten Island Shipbuilding Co. She is of 6300 tons and will be used in the molasses and sugar trade between Cuba and the United States.

The oil tanker LIO, 10,300 deadweight tons, was launched at the South plant of the Baltimore Dry Docks & Ship Building Co., Baltimore, June 4. She is 430 feet long, 59 feet beam, 33 feet 3 inches depth and has a cargo capacity of 3,000,000 gallons.

The twin screw tanker E. T. BEDFORD was launched May 17 at the yard of the Federal Shipbuilding Co., Kearny, N. J., for the Standard Oil Co. of New Jersey. The tanker measures 500 feet between perpendiculars, 68 feet beam and 38 feet 9 inches depth and is the third of a series of five sister ships building for the Standard Oil Co. at the Federal yard.

The Chickasaw Shipbuilding & Car Co., Mobile, Ala., early in May launched the steamer ANNISTON CITY.

The steamship HENRY D. WHITON has been delivered to her owner, the Union Sulphur Co., New York, by the Newburgh Shipyards, Inc., Newburgh, N. Y. She is a twin screw, single deck vessel, 356 feet long, 51 feet 6 inches beam, 32 feet 5½ inches, has a deadweight capacity of 7346 tons and a draft of 25 feet 5½ inches. The ship was built specially for transporting sulphur in bulk.

The oil tanker TULSAGAS has been launched at the south plant of the Baltimore Dry Docks & Shipbuilding Co., Baltimore, for the United States shipping board. The TULSAGAS is a 10,300-ton tanker 430 feet in length, 59-foot beam, 33 feet 3 inches in depth; will have 2650 shaft horsepower, is single screw, has geared turbines, a speed of 10 knots, is equipped with three Scotch boilers, is oil burning and has a cargo capacity of 3,000,000 gallons.

Preliminary plans for constructing two 1000-ton motorships are being prepared by Messrs. Seabury & de Zafra, Inc., 150 Nassau street, New York. These vessels will be of steel construction, operated by full diesel engines and all auxiliaries will be electrically operated. A speed of 12 miles an hour is to be provided. They will also have accommodations for 25 first-class passengers.

Practical U. S. Ship Problems-III

How the Jones Act Both Benefits and Retards Development of American Merchant Marine

BY ROBERT EDWARDS ANNIN

THE act entitled "the merchant marine act of 1920" commonly known as the Jones law, is the most recent and comprehensive legislation enacted by congress for the avowed purpose of establishing and fostering a permanent merchant marine for the United States.

This law may be assumed to comprise the matured ideas of the sixty-sixth congress as to the proper methods for accomplishing the purpose desired. Such purpose, as broadly defined is to provide for the national defense; for the proper growth of our foreign and domestic commerce, by furnishing commercial ships to carry the major portion of our overseas traffic; and to serve as an auxiliary to the naval or military arms of the government in time of war. The law declares the ultimate aim of the government is, and of the shipping board shall be, to establish an American merchant marine upon the basis of private ownership.

Analysis of the law itself discloses three main divisions:

First: Amendments to previous acts. Generally speaking these are intended: To annul war legislation; to transfer from the executive to the shipping board certain powers granted to the former during the war period; and to provide for current contracts, and for the proper liquidation of claims and penalties.

Second: Constitution of the Board. Section 3 increases the membership of the board; prescribes the method of appointment, the geographical distribution of commissioners and the political affiliations of the commissioners; and specifically excludes all parties having private interests in shipping or allied trades.

Of these five provisions, two may be classed under the head of "political," namely, those prescribing the sections from which the commissioners shall be appointed, and that not more than a bare majority of the board shall belong to one political party. Appointment of the commissioners is to be made by the executive, subject to confirmation by the senate.

As to the geographical distribution, it rarely has been possible under our system to consider fitness apart from the claims of locality. To ignore this

factor would produce jealousy, friction, and complaint, and not improbably result in the impairment of popular support. The ideal way to appoint commissioners would be to make experience and ability the sole consideration.

Section 3 contains only the most general provision on this point, merely prescribing that the commissioners shall be appointed with "due regard for fitness." As under any conceivable provision, individual qualifications must be judged by the appointing power and by the senate, it is difficult to see how any change of phraseology would be of real importance. If the executive be a judge of men and disposed to look first and chiefly at the question of fitness, he may do so, subject of course to the limitations stated. If he be not a judge of men, no phrase will make him so, and the only corrective must be the judgment of a majority of the senate.

The clause providing that each commissioner shall devote his whole time to the duties of his office and shall not be employed, or hold any official relation, nor acquire securities of common carriers, etc., during his term of office, is eminently proper and necessary.

Authority Is Extensive

The duties and powers imposed and conferred upon the board by this act are most impressive in their number and range.

First of all, the broad purpose to be served is the establishment and maintenance of a fleet of merchant ships which shall remain under the American flag, and under American jurisdiction, while competing for traffic in world markets. This, like the general welfare clause of the constitution, is almost all embracing, and is capable of a wide interpretation. In addition to this, the law indicates in some detail, the routine duties imposed on the board; the sale, charter or operation of the ships; what ships shall be operated by the board, or under their supervision; what ships shall be chartered, and what ships shall be laid up or scrapped.

The decision of these questions is necessarily vested in the board as representing the taxpayers' interests.

All owners reserve to themselves final decision on these points.

The sale or disposition of other property acquired or created by the Emergency Fleet corporation during the period of the war, or subsequent should be done by another agency.

This idea is reinforced as a practical suggestion, when we come to consider the exacting duties imposed upon the shipping board by the third class of provisions which may be described as:

Third: Provisions intended to promote our ocean commerce by conferring special rights upon our own ships, and by hampering the competition of our rivals.

Among other things, the board is expected to establish or aid in the establishment of trade routes; to regulate, or assist in the regulation, of ocean rates, directly and indirectly; to watch the natural flow of commerce, and adjust the policy of the board to conditions as they develop; to acquire and maintain an accurate knowledge of harbor facilities; to direct the construction of wharves, warehouses and terminals; to confer with the secretary of war as to the improvement of rivers and harbors; to investigate harbor congestion, and suggest remedies therefor. Also to supervise insurance, and create an insurance fund out of earnings. It may build up a "construction loan fund."

It is further charged with the prevention of rebates or discrimination in contracts; control of charter and registry of vessels, domestic or foreign; and conditions of sale, transfer or mortgage of ships. It is to investigate whether acts have been violated as to compensations, deferred rebates, or unfair practices. In the carrying of all United States mails, American vessels are to receive preference and this is implicitly put under the direction of the shipping board. It is responsible also for the enforcement of coastwise laws and for the exclusion therefrom of vessels either built in foreign countries or documented under foreign flags.

It is apparent the exercise of all these powers will be a sufficiently heavy burden for any board of seven men. They constitute in themselves

an argument for the relief of the board from settlement of old losses, disputes, litigation, etc. When the further duties and obligations imposed under Section 28 are considered the argument becomes even stronger.

Section 28 provides in effect for the use of preferential rail and inland rates by the board as a measure of protection to American tonnage. This paragraph has already been the subject of more controversy than any other provision in the bill. Its proponents assert, and with some force, that preferential rates and preferential duties heretofore have been used by our competitors as weapons in the promotion of their own shipping trade and again may be so used. They, therefore, argue it is essential special provisions be made for the use of such methods, as measures of reprisal.

There is undoubted strength in this line of reasoning, for it cannot be safely assumed that because our competitors have, during the last 50 years, found it unnecessary to employ such methods, they will not resort to them in future. On the contrary, whenever our competition on the deep seas shall become menacing, our chief rivals will employ every means in their power to protect their own ships. Against such methods the fear of retaliation would be a most valuable protection.

Discrimination as Fixed Policy?

Admitting all this, however, a very notable objection to Section 28 is this: Beneath its provisions lies the assumption that severe discrimination in favor of our own ships is to be practised, not as a matter of reprisal or retaliation, but as a matter of fixed policy. This plainly appears from the wording of the law. It is not only provided that discrimination may be used as a method of reprisal. It is clearly implied that such discrimination shall be ordinarily used and shall be suspended only under those exceptional conditions when American tonnage shall prove unequal to the volume of traffic offering.

This differs essentially from the mere power to discriminate as a defensive measure.

This section also appears to be based upon an illusion which has underlain much of our legislation for the past half century, which is that deep sea traffic, like coastwise trade, railroad rates, and manufacturing, may be regulated by purely national laws. This is a fallacy which for 50 years has been a handicap to citizens in running ships under the American flag. It has shackled our ocean commerce

by burdens and restrictions which hampered us but did not affect our competitors and, therefore, added to the difficulty of operating American ships in deep sea traffic.

Our sea policy has, in fact, been the offspring of this great American superstition: That values may be created by legislative fiat, and that statutes can neutralize and supersede the working of economic law.

Further, Section 28 must be read in view of the provision of Section 34, which directs the President to denounce those of our foreign treaties which restrict the right of the United States to impose discriminating duties and discriminating tonnage dues on foreign vessels. This, obviously, clears the ground for immediate action against our maritime competitors; and, in freeing us from restrictions, will, of course, free them. That they will retaliate in kind against such a policy cannot be doubted.

Section 20, which contains amendments to Section 14 of the shipping act of 1916, may prove even more serious in this respect. In it are contained prohibitions against the use of certain methods, such as the giving of deferred rebates, the use of fighting ships, discrimination against shippers, and unfair contracts. It is specially provided the shipping board upon complaint shall investigate and determine whether any person, not a citizen of the United States and engaged in the business of transportation by water, has violated any provision of Section 14, or is a party to any combination, agreement, or understanding, in violation thereof. If the board shall determine that such violation has occurred, it shall certify such fact to the secretary of commerce, who shall thereafter "refuse such person the right of entry for any ship owned or operated by him, or by any carrier, directly, or indirectly controlled by him, into any port of the United States, etc."

A brief consideration of the provisions of this section cannot fail to awaken the gravest fears as to the international result of such a policy. The action contemplated is certain to be regarded by our competitors and by their governments as an infringement on their rights in the management of their own property, and, should they retaliate against our ships, such policy might suddenly bring us to the brink of war. Only a people consciously too weak to resent it would quietly submit to what is certain to be denounced as arbitrary foreign dictation. Section 20, therefore, may be considered as a provision of this act

which is fraught with the gravest peril, not only to our commerce, but to peaceful international relations.

The vital defect of such laws is the underlying assumption that statutes can somehow, someway, be so adjusted as to overcome any economic disadvantage at which we stand, in competition with nations whose wage level is lower than our own and whose costs of construction, operation, repairs, interest, insurance and depreciation are lower than our own.

May Impose Export Duties

As a matter of fixed policy, discrimination against foreign ships not only cannot overcome the economic disadvantage at which we already stand as ocean carriers, but will *per se* provoke retaliation. Our competitors have the power not only to use every kind of discrimination which is at our command, but may wield one weapon at least which is barred to us by our constitution: The imposition of discriminating export duties.

The operation of ocean tonnage is a merely mathematical and competitive proposition. If the American people desire to be ship owners for reasons of national defense, or for reasons of economic advantage, they must either run their ships as cheaply as other maritime nations, or they must pay the difference out of their pockets.

When the policy of discrimination shall be carried to its extreme, foreign steamers may be excluded from our ports unless they are run on a scale of expense with which our own can compete. If we should exclude foreign ships from our ports, our competitors would certainly retaliate; and the logical result of such a policy would be to destroy our foreign trade, and to confine us to our coastwise traffic.

The whole consideration of this subject, when viewed apart from sentiment, or patriotism, or any consideration whatever except the fact that in ocean traffic the business will go to the lowest bidder, is this: That under present conditions the American people, if they wish to establish their merchant marine as a going arm of commercial and naval service, will be compelled, in some way, to make good the difference between the cost and operation of our own ships, and the cost and operation of our competitors.

Since every item of value eventually comes down to the cost of labor and service, it follows broadly, but inevitably, that the nation whose wage level is the highest in the world will be at certain disadvantages in international competition, which cannot be overcome by protective laws.

Activities in the Marine Field

Latest News From Ships and Shipyards

Lake Trade Remains at Low Ebb

BY MYERS L. FEISER

WITH coal tonnages moving up the lakes at a fairly active rate, with grain shipments fair and with a few more ore carriers in service lake traffic at the end of May had taken a slight turn for the better compared with the end of April. None of the business, however, approaches the activity of this time last season, although it is confidently believed that with coal shipments at their present rate, the consignments to the northwest will have been delivered before Nov. 1.

At the beginning of June, the demand for coal vessels at the lower lake ports was greater than the supply, but at the upper end of the waterways, a surplus tonnage of ships balanced the traffic conditions. Because of the lack of demand at the head of the lakes, it was stated, few additional ships, if any, would be commissioned at the lower ports, the intention being to keep in service, except in emergency, only those boats now in use and returning, in the main, in ballast.

Just how coal shipments are going forward may be seen in the fact consignments in the week ended June 4 were the heaviest of the season and the fourth largest since the Ore and Coal exchange has been directing traffic movements. In that week, the shipments of coal totaled 1,145,765 tons.

The addition of several ore mines to the idle list reflects what is going on in the ore carrying trade. Ore shipments last month totaled only 2,594,027 tons. To June 1 the season's shipments aggregated but 2,770,238 tons. This is 4,436,701 tons under the total for last season this time when shipments amounted to 7,206,939 tons.

Capt. T. V. O'Connor, Buffalo, named on the shipping board by President Harding, formerly sailed tugs for the Great Lakes Towing Co., and at one time was head of the Licensed Tugmen's Protective association. He has been president of the International Longshoremen's association for a number of years.

The Island Warehouse Corp., Buffalo, has been incorporated and has bought the property of the Mutual Terminal Co., consisting of the Mutual elevator, Mutual warehouse, and the land and tracks of the Island Railroad Co. Nisbet Grammer, president of the Eastern Grain, Mill & Elevator Corp., is president of the new company; J. J. Rammacher is vice president and treasurer and Edwin T. Douglass is vice president and secretary.

Capt. George McCallum died at Detroit June 8. He had been with the Pittsburgh Steamship Co. since it was

organized, his first command being the *CORSICA*, in 1903. He had sailed the *H. H. ROGERS* for three years until this season when his health kept him ashore. He was born in Marine City, Mich., in 1865 and had followed the lakes since he was a boy.

The *W. E. FITZGERALD* went aground on the east side of West Neebish channel June 6 and was released, after lightering, with two leaking compartments. Reloaded, she continued with ore to Buffalo.

The ice crusher *TOURIST* has been commissioned as a freight and passenger steamer between Cleveland and Sandusky. Capt. John Gilbert, Sandusky, recently purchased her and she will be commanded by Capt. Frank Hamilton, also of Sandusky.

The steamer *J. H. SHEADLE*, which went on the rocks at Marquette last November, has been floated and hauled to Ashtabula where she has been dry-docked and will be thoroughly overhauled.

Effective June 1, T. W. Kirby, formerly with the Pittsburgh Coal Co., was appointed vessel dispatcher in the Ore and Coal exchange, Cleveland.

L. C. Waldo, for whom the steamer *L. C. WALDO*, now the *RIVERTON*, was named, died recently at Grosse Pointe village. He had been connected with lake shipping for many years.

W. D. Becker and others of Cleveland recently bought the steamer *FRANCIS WIDMAR*, which was wrecked at Pancake Shoals, Lake Superior, last November. She had been owned by the Valley Steamship Co. with whom the underwriters settled as a total loss. She is now being dismantled.

Two new piers at the foot of East Ninth street, Cleveland, are contemplated in an ordinance now before city council. It is planned to start construction Aug. 1. The Detroit & Cleveland Navigation Co., by the terms of the ordinance, would be authorized to build the piers at a cost of \$500,000 and \$70,000 for the paving extension.

The barge *MIZTEC* broke away from the steamer *ZILLAH* in a storm May 14 and was sunk.

The Pittsburgh Steamship Co.'s steamer *E. W. PARGNY* was the first ore carrier of the season to reach Lorain with a cargo of ore. The

steamer *McDOUGALL* was the second at that port.

The Interlake Steamship Co. at its recent annual meeting re-elected all of its directors.

The steamer *CAPT. THOMAS WILSON* of the Wilson Transit Co., went ashore at Gull island, Lake Superior, loaded with coal, but was floated, continued her trip to Washburn and later went to Toledo for repairs.

Harry W. Cowan resigned as operating manager and director of the Canadian Steamship Lines, Ltd., to become president of G. U. Price & Co., Ltd., insurance. F. S. Isard has been elected to succeed him and Capt. J. W. Norcross has been re-elected president.

The steamer *SEEANDBEE* on June 12 made her first trip to Buffalo for the season.

An inspection tour over the course of the proposed St. Lawrence waterways route is planned for July 11 to 15, according to Charles P. Craig, executive director of the Great Lakes-St. Lawrence Tidewater association. Secretary of Commerce Hoover, Secretary of Agriculture Wallace, Secretary of the Navy Denby, other cabinet officers, government officials, senators and congressmen, governors, etc., have been invited to make the trip.

All former officers and directors of the Reiss Steamship Co. have been re-elected.

The annual banquet of the Traffic club of Erie, Pa., was held at the Hotel Lawrence, May 19, when 125 representatives of shippers and carriers were present. The speaker of the evening was Hammond Talbot, vice president of the Williams Steamship Co., Inc., who spoke on "Water Transportation". Mr. Talbot strongly urged the necessity of the repeal of the La Follette seamen's act, and made a plea for legislation to permit the free passage of American vessels in coastwise trade through the Panama canal.

The *AMERICA*, tug of the Union Towing & Wrecking Co., Duluth, has been given a thorough overhauling and a new boiler.

Capt. Edward Sullivan, in command of the *MIDVALE* until he retired from the M. A. Hanna & Co. fleet in August,

1919, died suddenly at Trenton, Mich., May 7, at the age of 57 years.

The United States lake survey reports the monthly mean stages of the Great Lakes for the month of May, 1921, as follows:

Lakes	Feet above mean sea level	
	April	May
Superior	601.69	602.12
Michigan-Huron	580.34	580.58
St. Clair	575.41	575.62
Erie	572.79	573.09
Ontario	246.38	246.68

Lake Superior is 0.43 foot higher than

last month, 0.21 foot lower than a year ago, 0.10 foot above the average stage of May of the last ten years, 0.93 foot below the high stage of May, 1861 and 1.30 feet above the low stage of May, 1911

Lake Erie is 0.30 foot higher than last month, 0.80 foot higher than a year ago, 0.39 foot above the average stage of May of the last ten years, 1.33 feet below the high stage of May, 1862 and 1.78 feet above the low stage of May, 1895.

Lake Ontario is 0.30 foot higher than

last month, 1.08 feet higher than a year ago, 0.07 foot above the average stage of May of the last ten years, 2.27 feet below the high stage of May, 1870 and 1.72 feet above the low stage of May, 1872.

Lakes Michigan-Huron are 0.24 foot higher than last month, 0.16 foot lower than a year ago, 0.02 foot below the average stage of May of the last ten years, 2.94 feet below the high stage of May, 1886, and 1.02 feet above the low stage of May, 1896.

Up and Down the Pacific Coast

THE quarterly cargo shipping report of the Pacific Lumber Inspection bureau shows that lumber shipments from the Pacific northwest through the Panama canal to Atlantic coast markets increased 3435 per cent the first quarter of 1921 compared with the same period in 1920. This illustrates the extent of the diversion of lumber shipments to the water route due to the 33 1/3 per cent increase in rail rates. During the first three months of 1920, when long established competitive rail rate relationships were still in effect, only 1,202,229 feet of Pacific northwest lumber was shipped to the east coast by water although at that time west coast mills were shipping to those markets more lumber than had ever before been sent east of Buffalo and Pittsburgh.

During the first quarter of 1921, Atlantic coast cargoes of Pacific northwest lumber totaled 42,495,579 feet. Notwithstanding the big increase in the Atlantic coast cargo movement during January, February and March this year, the Inspection bureau report shows a decrease of approximately 10 per cent for all waterborne lumber shipments the first quarter of this year compared with the same period of 1920. The figures are 361,122,072 feet for the first three months of 1920 and 329,623,956 feet for 1921. Lumber mills in Washington and Oregon are still operating 28 per cent below normal.

Strike conditions at north Pacific ports have retarded the movement of shipping to a considerable degree, especially coastwise vessels. In the off-shore movement it has been less difficult to obtain crews particularly as practically all American carriers engaged in foreign trade belong to the shipping board's fleet and they have been subject to less delay than coasters. For 17 days, not a steamer left Seattle for Alaskan ports whereas under normal conditions a vessel would have been dispatched for the north every second day. Fears of a famine in Alaska were dissipated when each of the two large operators was able to send out a passenger and freight vessel. The situation was also serious with respect to the tanker fleets. With the oil carriers idle, supplies have been low but actual famine in oil has been averted by the arrival of an occasional tanker. The operators have had no difficulty in obtaining seamen and deck

officers but delay has been caused as a rule by inability to induce engineers to go to sea. In several instances sabotage has been charged.

Among other cargo to be shipped from Seattle during June is a consignment of 2100 tons of nitrates which, when it arrives in Japan, will have traveled more than 19,000 miles. This shipment was originally sent from Chile to Vladivostok but acceptance was refused because of the state of the market. Then it was shipped to Seattle in the expectation of a sale there. However, there was no demand on this side and now the cargo is going to Japan by which time the freight paid on the shipment will exceed its original value.

An exceptional feat was recently accomplished by Capt. C. C. Madsen, master of the American schooner Edward R. West who brought his vessel from Cape Flattery to Seattle, a distance of 124 miles, under sail. The vessel had a fair wind and the captain determined to save the costs of towing, mooring the 4-master in Seattle harbor without a mishap.

In order to attract travel, in competition with interurban and auto lines, the operators of local steamers between Seattle and Tacoma announce that movies, music, light lunches and soda fountains will be installed aboard. Permission from the inspection service to operate movies aboard has been obtained, according to the announcement.

Pioneer of a fleet of wheat carriers to freight wheat from western Canada to Europe, the steamer BUENOS AIRES has arrived at London from Vancouver. B. C. Canadian exporters are greatly interested in the possibilities of using the water route through Vancouver which has established modern terminals for handling grain from western Canadian provinces.

Deck and engineer officers are deeply interested in the suit instituted by Capt. E. M. Storwick against M. E. B. A. No. 38 and W. B. Jackling, Seattle, business agent, asking for \$1522.50 damages for each month he is out of work. Captain Storwick alleges that he was forced out of his position as master of the shipping

board freighter WEST JESSUP. He claims the engineers blacklisted him so that the operators were compelled to obtain another captain. Under the anti-trust law he is asking triple damages, alleging that his monthly income was \$507.50.

On her last run from the Orient, the British steamship EMPRESS OF ASIA established a new steaming record for the north Pacific covering the 4200 miles between Yokohama and Victoria in 8 days, 21 hours and 38 minutes. The EMPRESS OF RUSSIA held the former record of 9 days, 3 hours, made in prewar days.

Work is under way on the addition to the plant of the Willamette Iron & Steel Works, Portland, Oreg., which is to cost nearly \$500,000. It is expected to have the new buildings completed by Sept. 1. The new plant is being erected on the site of the old Foundation shipyards.

Under the suggestion of the port of Seattle, a movement has been started to advertise Seattle for the purpose of attracting additional cargo. It is proposed by subscriptions to collect a fund sufficient to station port agents in New York, the Orient and elsewhere where freight originates.

Second Officer Ernest Kellenberger and Third Officer Arne Hage of the steamship GOVERNOR, sunk in collision with the WEST HARTLAND on April 1, have been exonerated by the steamboat inspectors. Pilot H. H. Marden is now on trial as is also Capt. John Alwen, of the WEST HARTLAND, who was originally exonerated by the local inspectors but subsequently charged with negligence by the supervising inspector.

Coincident with the abolishing of wharfage charges at public and private Seattle water terminals, Portland and Vancouver, B. C., took similar action, placing the three ports on a parity in this respect.

Refrigerator space is to be furnished in the intercoastal service by the Atlantic, Gulf & Pacific Corp., according to announcement. It is expected that this service will divert to the water route much of the perishable cargo, especially fruits and fish, which have previously moved overland by rail. Shipment of

apples to Europe by water has proved successful and it is understood that the Holland-American line has already contracted for all its cooled space during the next apple season.

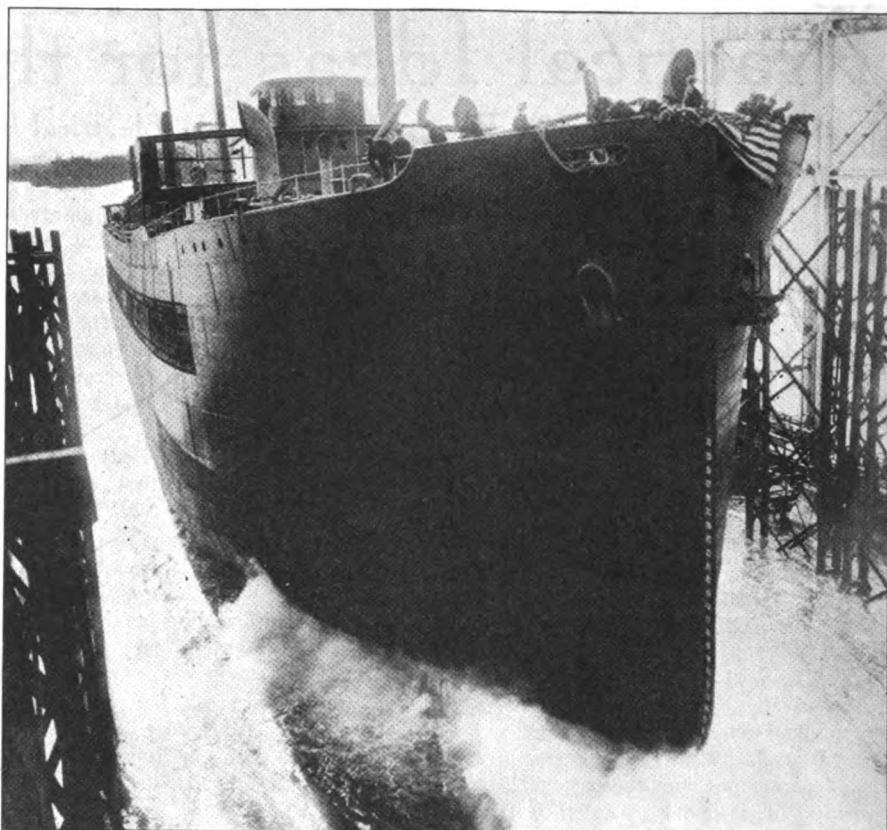
Direct and regular service between Galveston, Tex., and the north Pacific is now assured according to announcement by the Pacific Caribbean Gulf line. Heretofore vessels of this fleet have sailed from New Orleans but additional offerings warranted the extra call.

The former naval vessel VICKSBURG, until recently used as a training ship by the state nautical school, is to be a training ship for the coast guard academy forces. Eventually she will be stationed on the Atlantic.

One of the fastest sailing passages in years was recently scored by the 4-mast schooner IRENE which arrived at Aberdeen, Wash., from Honolulu in 16 days.

On the return trip of her maiden voyage to the Orient, the Pacific Mail liner GOLDEN STATE established a new steaming record between Yokohama and the Golden Gate. The run from Yokohama to Honolulu was done in 8 days, 9 hours, 37 minutes and from Honolulu to San Francisco in 4 days, 22 hours 11 minutes, a total of 13 days, 7 hours, 48 minutes.

Tea shippers are complaining that the recently established transpacific rate of \$8 per ton on green tea is too high while the steamship lines assert that they cannot handle this class of cargo for less than \$10. The season's export from the Orient to North America is estimated at 20,000,000 pounds and involves a large amount in freights.



EMPIRE ARROW, BUILT FOR THE STANDARD TRANSPORTATION CO., WAS LAUNCHED IN THE SOUTH YARD OF THE NEW YORK SHIPBUILDING CORP., CAMDEN, N. J., MAY 24

Overall dimensions are 485 feet in length, beam 62 feet 6 inches and depth 39 feet 6 inches. She is equipped with three single end Scotch main boilers and one 3200 indicated horsepower engine of 4-cylinder, quadruple expansion, 4-crank, direct acting, surface condensing type. This engine is capable of propelling the vessel loaded to the specified draft, at a speed of 11 knots. The vessel will have 10 double main cargo tanks with a combined capacity of 3,500,000 gallons. She has a displacement of 18,277 tons and carries a crew of 62 men.

Along the Atlantic and Gulf Coasts

SUBMARINES stationed at the United States submarine base, New London, Conn., have established new records in target practice, it was learned recently, surpassing all records made during 1920. Three-inch naval guns are being used on the "R" type boats, said to be the first American submarines to be mounted with deck guns.

Resumption of passenger service between Boston and Philadelphia is announced by the Merchants & Miners Transportation Co.

Furness, Withy & Co. increased their services to and from Boston recently, when they established a Liverpool service via the ports of Halifax, N. S., and St. Johns, N. F.

With the sailing of the ROCKAWAY PARK from Montreal for Scandinavian and Baltic ports, C. H. Sprague & Son, Boston, expect to inaugurate a regular

service with American steamers in this trade. The ROCKAWAY PARK has been in the Boston-Scandinavian trade, and her place in this service will be taken by another shipping board vessel.

In an action growing out of the sinking of the schooner Jo⁴/_N M. Wood by the steamer LAKE ELSAH, off the Nova Scotian coast some time ago, Judge Morton, of the United States district court, in his decision rendered May 20, finds that both vessels were at fault, both proceeding in fog at full speed, and carelessness was shown on the part of lookouts of both vessels. He finds divided liability and divided damages.

Movement of 31,500 tons of grain from gulf ports to Greece, has been undertaken by Trosdal, Plant & Lafonta, New Orleans. Shipping board bottoms will be used for the delivery. The steamers JEFF DAVIS, DANIEL WEBSTER, and BELLEPLINE, at New Orleans, and WICHITA at Mobile, Ala., will be used in handling the large shipment.

CASEY, another shipping board steamer, will be brought to New Orleans from Philadelphia, to handle grain cargoes to Italian ports.

Wages of seamen on all Italian merchant vessels have been increased 15 per cent, according to notification received by crews of Italian vessels in port at New Orleans.

LAKE SLAVI, a shipping board vessel of 4278 tons has been withdrawn from the fleet of idle vessels at New Orleans and assigned to Lykes Bros. Inc., New Orleans.

Water from the Mississippi river will be turned into the new \$25,000,000 inner harbor and navigation canal, recently dedicated at New Orleans, early in September, as soon as the present period of high water in the Mississippi river has passed. The canal will then be open to traffic from Lakes Pontchartrain and Borgne into the Mississippi river, and thus westward through all the 5000 or more miles navigable inland waterways in Louisiana, as far west as the Sabine river in Texas.

Practical Ideas for the Engineer

Japanese Electric Naval Vessel—Electrical Installation Rules —Repair Rudder—New Ventilating System—Air Port

JAPAN is to be the second nation to use the electric drive in its navy, a contract having just been closed with the New York Shipbuilding Co., Camden, N. J., for a 20,000-ton fuel ship, similar in size to the U. S. S. collier JUPITER, recently named the LANGLEY.

Interested in the success of the electric drive, proved by the 10-year service of the JUPITER and the two years or more of practical service of the U. S. S. NEW MEXICO, the world's first electrically propelled battleship, Japan has decided to follow America's steps in first electrifying a smaller navy ship. If this vessel operates successfully, future large ships of the Japanese navy will probably be electrically propelled.

Capt. M. Yokura induced the Japanese government to introduce the electric drive in its navy. Economy in fuel is of paramount importance and Captain Yokura decided to install electrically driven auxiliaries throughout, as well as to equip the boilers with superheaters so as to obtain about 200 degrees Fahr. of superheat. This last mentioned improvement will mean a saving alone, it is said, of at least 10 per cent in fuel.

The equipment, purchased from the International General Electric Co. will consist of an 8000-horsepower turbine generator supplying power to two 4000-horsepower, 120 revolutions per minute, synchronous motors; also two 500-kilowatt, direct current turbosets, one of which is to be sufficiently large to furnish the exciting current for the main generating units, as well as power to drive all the auxiliaries, such as the blower motor, steering gear, the gypsy, radio apparatus, refrigerating plant, laundry and lighting equipment.

There is also furnished a 650-kilowatt alternator which can be connected by means of a coupling to either of the 500-kilowatt, direct current auxiliary turbines so that, in case of failure of the main driving unit, or any of its auxiliaries, this small generator will give sufficient power to propel the vessel at about $7\frac{1}{2}$ knots.

This Japanese fuel ship will be completed in 12 months' time. Her trials will be followed for a record in fuel economy because of her water tube boilers of 270 pounds gage steam pressure with 200 degrees Fahr. of superheat and the fact that synchronous motors are to be used for the main drive and that all auxiliaries are to be electrically operated.

All new American battleships are being equipped with electric drive. The

General Electric Co. is now engaged in building or has completed the electric machinery for installation in the battleships MARYLAND, CALIFORNIA, WEST VIRGINIA, IOWA and MASSACHUSETTS and has orders to install the electric drive in four of the new battle cruisers, the LEXINGTON, SARATOGA, CONSTITUTION and UNITED STATES.

The MARYLAND was recently given its official dock trials or first run under load at Newport News, Va., and proved satisfactory in every particular; in fact the demonstration is said to be the best for capital ships that United States naval and shipbuilding engineers have witnessed in 25 years.

The MARYLAND is expected to go to sea late in June for the builders' sea trials and will be ready for acceptance by the navy early in July.

Issues Revised Rules for Electricity on Ships

The difference between the requirements of various classification societies and insurance companies in regard to electrical installations on shipboard and the lack of any accepted standard engineering practice for marine installations led the American Institute of Electrical Engineers in 1913 to appoint a committee on the use of electricity in marine work, now known as the marine committee. This committee took up the preparation of the standardization rules which would represent good engineering practice, and which might be accepted by the classification societies. As a result, a set of rules was prepared covering two divisions, fire protection requirements and marine construction requirements.

These rules were adopted by the committee of the American Bureau of Shipping and were published. This first edition did not cover the entire field, and the committee was continued and a more complete set of marine rules has now been prepared. The committee has made a careful comparison of the rules issued by the American Bureau of Shipping, the National Board of Fire Underwriters, the steamboat inspection service of the department of commerce, Lloyd's, the Institution of Electrical Engineers, Bureau Veritas, Germanischer Lloyd, and Verband Deutscher Elektrotechniker.

When the committee had nearly completed its work on the second set, the regulations for the electrical equip-

ment of ships, first edition, were issued by the Institution of Electrical Engineers in England. These rules have substantially the same scope as those prepared by the American committee, and as there will be some occasion for comparing the engineering practices of the two countries, a slight rearrangement of material has been made to conform more nearly to the order of subjects as given in the English rules, in order to facilitate comparison.

Bound copies of the rules may be obtained at \$1.00 per copy by addressing American Institute of Electrical Engineers, 33 West Thirty-ninth street, New York.

Repair Crushed Bow

The British merchant vessel TREGANTLE, operated by Edward Hain & Sons, St. Ives, Cornwall, England, and under charter to the Pacific Steam Navigation Co. in a dense fog on the morning of March 25, ran into Macabe island, a lone rock projecting above the water situated about five miles off the Peruvian coast in the vicinity of Callao. The vessel proceeded to Callao after her disaster, where Lloyd's representative, after examination of the injuries, ordered her to proceed to Balboa, canal zone, for necessary repairs.

Upon reaching Balboa it was found that the bow had been driven back and crumpled up like an accordion for a distance of about 20 feet aft. The stem of the vessel and forward part of the keel were destroyed. She was put in drydock and practically a new bow built on her in the course of 17 days. In detail, says the *Canal Record*, the work was carried out in the following manner:

After discharging sufficient of her cargo to permit safety in handling, the TREGANTLE was drydocked at the Balboa shops April 14. It was found that her stem was broken from a point about nine feet from the top, the impact of the collision with the rock having been sufficient to crumple up the bow with the line of damage extending diagonally downward and backward to the collision bulkhead. The stem, plates, frames, and stringers were so badly broken and twisted that it was found most economical to cut out the entire damaged section by the oxyacetylene process.

Such of the frames as could be retained were cut off at various heights, wherever good metal could be found,

extreme care being exercised that they were well staggered to insure proper strength; the butts being then spliced and electric welded. It was necessary to remove and entirely replace frames Nos. 1 and 2 on the starboard side, and Nos. 1, 2, and 3 on the port side.

A particular feature of the job was the short length of the plates found near the bow, permitting replacement at less cost than would ordinarily have been the case. No. 1 flat keel, which was a furnace plate, was renewed and also 10 strakes above on either side. In one or two instances the plates extended slightly aft of the collision bulkhead. No. 1 waist plate on the port side was removed, faired, and replaced; the starboard waist plate was also faired and placed. All floors and vertical keel intercostal plates were renewed from frame No. 1 to No. 9. No. 1 vertical keel plate from the collision bulkhead to frame No. 13, and the lower plate on the collision bulkhead were also renewed.

The impact of the vessel in striking drove both hawse pipes upward, and broke the lip and chafing slab on the port side. The hawse pipe was acetylene welded and a new chafing plate was cast in the foundry and installed. One fluke of the port anchor was also broken; this was salvaged by forging a new end for the fluke and thermit welding it in place.

A fortunate feature of the accident was that the No. 1 double bottom tank top and the collision bulkhead were not sufficiently ruptured to damage the cargo in No. 1 hold. After completion of the repairs in drydock, the forepeak tank and No. 1 double bottom tank was tested to Lloyd's rules, and the vessel was undocked and proceeded to reload discharged cargo.

The TREGANTLE is rated as of 5741 tons registered gross; 4279 tons registered net; her dimensions are 400 feet length, 52 feet beam.

This is the third vessel repaired at the Balboa shops during the year for similar damages to bows resulting from head-on collision. The SUSSEX of the Federal Steam Navigation Co., was completed on March 9; and the STEEL INVENTOR of the United States Steel Products Co., on March 28.

SILVER STATE, the last of the vessels built by the Newport News Shipbuilding & Dry Dock Co., Newport News, Va. for the shipping board, has been delivered to the Emergency Fleet corporation. She is of 13,000 deadweight tons.

The freighter BRUNSWICK, built for the United States shipping board, has been delivered by the Oscar Daniels Co., Tampa, Fla.

Allow for Contraction in Repairing Rudder

The problem of allowing for cooling contraction after pouring thermit welds was studied during the recent repair of the 11-ton rudder of the steamship NEW ROCHELLE of the U. S. Mail Steamship Co. The frame was cracked in three places. The fractures, two locations of which are shown in the accompanying illustration extended from 4 to 6 inches into the frame.

Before making these repairs the rivets which fastened the rudder plate to the rudder frame were first removed in order to prevent the plate from buckling when the weld had cooled. During preheating care had to be taken to preheat thor-

injury to any of her electrical equipment.

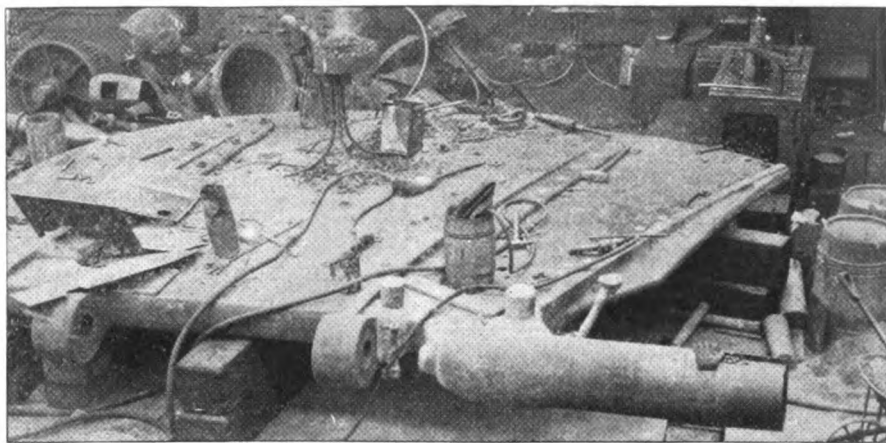
With astern operation of her propellers she developed 15 knots.

Her turning circle with all propellers operating forward and rudder hard-over is about 700 yards, which is hardly more than that of a destroyer.

The propelling machinery of the TENNESSEE consists of two 15,000-kilovolt-ampere Westinghouse turbo-generators and four 8375-horsepower Westinghouse propeller motors. Her length is 625 feet, beam 91 feet, and displacement 33,000 tons.

Shortly after her trials, she left the Atlantic coast to join the Pacific fleet.

While in collision in the Columbia river, both the American steamship



HOW RUDDER REPAIRS WERE MADE

oughly the adjacent unfractured parts in order to offset the cooling strains later. The welds required a total of about 900 pounds of thermit.

The repair was made at the Robins Drydock & Repair Co., Brooklyn, N. Y., only about four days being required.

FLORIDIAN and Japanese steamship REYIO MARU were damaged. Both were repaired at Portland, the FLORIDIAN by the Willamette Iron & Steel Works and the Japanese liner by the Albina Engine & Machine works.

U. S. S. Tennessee Has New Way to Ventilate Successful Trial Electric Units

The U. S. S. TENNESSEE, the latest electrically propelled superdreadnaught, was given her final trials off Rockland, Me., during the latter part of May and passed them with complete success. Among the results obtained, the following are of special interest.

The maximum speed developed was 21.378 knots.

She was brought to rest from top speed in less than three minutes. This is believed to be a record for so large a ship and is about the severest test that can be imposed upon her machinery, as the propellers were being operated astern while the ship was forging ahead.

The salvo test, the firing of all twelve 14-inch guns at once, caused no

By a unique application of the automobile radiator principle to the electric drive for war ships, the General Electric Co., Schenectady, N. Y., has brought about an important development in one phase of electric ship propulsion.

The new scheme has to do with the ventilation of large electrical units. Its chief merits, from a naval point of view, are that it is said to make the vessel more seaworthy, allows the defensive armor of the ship to be strengthened and provides for the recirculation of clean air at all times.

Twelve great naval vessels now under construction, six battleships and six battle cruisers, will embody the new feature in their equipment. All of these vessels are to exemplify the electric

drive, now proved successful in the battleship *NEW MEXICO* and other ships.

The radiator method of ventilating the electric propulsion apparatus on vessels is a simple adaptation of principles long used by motor car manufacturers. However, it has been made to work in exactly the reverse order from its application in the automobile.

As all automobile mechanics know, in the automobile radiator the heat is transferred from the water to the air. The water is the cooling element, and is itself cooled by the circulating air. In the application of the radiator method to the ventilation of electrical machinery, the heat is transferred from the air to the water. The air is the cooling element, being cooled itself by the circulating water.

By this system of recirculating cool air through the motors and generators, the heat which is given off by the machine in producing electrical energy is conducted by the air to the resistors, where it is absorbed and carried away by the circulating water. It is extremely important that this heat be dissipated.

Electrical engineers long ago devised a system of supplying cool air to large electrical units by means of a set of ducts. Air flows through an incoming duct to the electrical apparatus, where it becomes heated by the heat given off by the apparatus and then flows off through an outgoing duct, taking the heat with it.

It is obvious that for electrical machines capable of developing 180,000 horsepower, as installed on a battle cruiser, a large amount of cool air is required. To supply this by means of the duct system, a considerable amount of valuable space would be taken up by the ducts, which must pass through several decks from the machinery space to the open air. Dotted with the duct openings, the ship is less protected from mishap than would be the case with a type of ventilation, which does not require the use of outside ducts.

If the sea is running high in a storm, sea water might wash down through the ducts. Or, during an engagement with an enemy, the warship would be exposed to attack by some of the methods of modern warfare, owing to these duct openings.

The radiator method is said to wipe out these disadvantages.

The heated air is circulated by means of fans through the radiators. There the air passes over a number of tubes, through which sea water is circulating. The water in the tubes cools the air, which continues on its way back to the electrical apparatus, where it again receives heat from the generator or motor and is then carried again to the radiator, for a repetition of the process.

The whole process is one of repeated

heat transference. The heat is first transferred from the electrical apparatus to the air, then from the air to the water. A new supply of cool water is continually pumped through the radiator tubes from the sea and the heated water passes back into the sea.

The radiator principle, worked out for electric ship propulsion units, will cool the air 35 degrees Fahr. Passing into the radiator core at a temperature of approximately 135 degrees the air will pass out again at a temperature of 100 degrees. This temperature has been found satisfactory for air supplied to electrical apparatus for cooling.

The cooling units, or radiators, take up but little space. Each one is 30 inches long, 20 inches wide, and 7 feet high. The engineers have made possible



IMPROVED AIR PORT

reserve ventilation facilities by designing the radiators in sections. Each motor will have 12 sections and each generator 16. This is a generous margin over the number of sections actually needed for cooling the apparatus, so that if one of the radiators is temporarily disabled by leaky tubes, or other causes, necessitating that the water valves be closed, the work will be carried on by the others. This also will provide for greater ventilating power when the vessel is in tropical regions, where the sea water is warmer than it is in northern latitudes, often reaching 85 degrees Fahr.

In the case of the generators, the radiators are built integral with the machine and are entirely enclosed by means of metal housing, thus providing a closed system of ventilation, the air circulating by means of fans on the generator rotor. This idea of a self-contained generator is in itself of unusual interest to electrical men.

With the propelling motors, the cooler sections are located adjacent to the machine, and air is circulated by means of external fans, which draw the cool air through the motor and force the hot air through the radiators, where it is cooled and is ready for recirculation.

The radiator equipment that will be

necessary for the entire 12 ships is 1200 sections. Each battleship will carry four motors and two generators, giving it an electric drive of 60,000 horsepower. Each battle cruiser will have eight motors and four generators, providing 180,000 horsepower. The battleships will need 40 cooler sections each; and the battle cruisers will require 160 sections each.

In the preliminary tests at the Schenectady works of the General Electric Co., the engineers took the radiator from a motor car for their experiments. The tests thus made showed conclusively that the scheme was feasible. More extensive work was then done with radiators of the type used in motor trucks, of much greater depth. These tests sought to determine the rate of transfer of the heat from the air to the water. That enabled the engineers to work out the dimensions of the radiators, for the sort of duty demanded in the cooling of electrical propulsion apparatus on ships. Numerous experiments were made.

An Improved Air Port

A quick-locking air port is one of the improved items of ship equipment developed during the war, which will prove of value in peacetime shipbuilding.

A port of this type, manufactured by the Kenneweg Corp., 5 Beekman street, New York, does away with the old-time screw mechanism in making the swinging member fast. The locking is accomplished by four lugs operated by a small hand lever. By this means pressure is applied to the seat, making the port watertight without springing the frame and avoiding liability of cracking the glass.

Closing or opening the port can be accomplished in three seconds the makers claim.

Another feature of the port is that it may be locked open in any position regardless of the roll of the ship.

Late Marine Patents

Copies of any one of these patents can be obtained by forwarding 25 cents in stamps to Siggers and Siggers, patent attorneys, National Union building, Washington, and mentioning *MARINE REVIEW*.

1373436—Apparatus for cooling ships and the like, Louis Lombi, North Bergen, N. J.

1373574—Ship raising apparatus, Jess Swaney, Seattle.

1373597—Rat guard for ship's ropes, William P. Carey, New Orleans.

1373741—Anchor arrangement, A. Trevor Jones, Chicago, assignor to American Steel Foundries, Chicago.

1373768—Collapsible lifeboat chock, A. P. Schat, Utrecht, Netherlands.

1373742—Anchor mechanism A. Trevor Jones,

Chicago, assignor to American Steel Foundries, Chicago.

1373793—Fire control apparatus for naval guns, Walther Akeman, Essen, Germany, assignor to F. Krupp, Aktiengesellschaft, Essen-on-the-Rhine, Germany.

1373879—Ship propulsion, William L. R. Emmet, Schenectady, N. Y., assignor to General Electric Co.

1374486—Ship propulsion installations, David

Christopher Black, Alloa, Scotland, assignor to Parsons Marine Steam Turbine Co., Ltd., Wall-send-on-Tyne, England.

1374507—Seaman's net needle, William Hendry, Tacoma, Wash.

1375335—Hydraulic ship's armor, Pieter J. van Poelvoorde, Weltevreden, Batavia, Dutch East Indies.

1375601—Propelling device for use on vehicles,

marine vessels or aircraft, Ernest Morize, Burlogne-sur-Seine, France.

1375151—Wreck preventing apparatus for ships, R. J. Hamilton, Browning, Mont.

1375179—Reinforced concrete construction of ships, floating docks, pontoons and the like, Harry C. Ritchie, Liverpool, and Moritz Kahn, London, Eng.

1374512—Submarine grapple, A. J. Maynard, Waterbury, Conn.

Business News for the Marine Trade

Capitalized at \$100,000, the Steamship Service Corp. recently was incorporated in Delaware, by Robert L. Lake, Flushing, N. Y., Walter McGowan, R. A. Lippner, and others.

To operate pleasure boats, the Delaware Bay Angling association recently was incorporated in Delaware with a capital stock of \$750,000, by Jacob Gephart, Charles H. Freeth, W. C. Waltman and A. A. Watson.

The Swiftsure Navigation Corp. recently was incorporated at Wilmington, Del., with a capital stock of \$200,000, by the Corporation Trust Co. of America.

Berthing ships will be the business the Gulf Ports Service Corp. will engage in. The company recently was incorporated in Delaware with a capital stock of \$100,000, by the Corporation Trust Co. of America, Wilmington, Del.

The Steamship Sagua Corp., transportation, recently was incorporated in New York with a capital stock of \$10,000. The incorporators are M. A. Holzinger, T. A. Clark and J. J. Droll, 24 Broad street, New York.

The Marine Securities Corp. has been incorporated in Delaware with a capital stock of \$100,000, by A. L. Pearson, T. S. Amussen and David Rapp, Wilmington, Del.

The Unsinkable Boat Co., Buffalo, has received authority to change its name to the Inland Lakes & River Rapid Transit Co.

The Spahr Transportation Corp., New York, has been incorporated with a capital stock of \$10,000, by W. H. Spahr, W. M. Messersmith and L. Hartwig, 25 Broad street.

The Reno Marine Salvage Corp. of Delaware recently increased its capital stock from \$200,000 to \$5,000,000.

The capital stock of the Pennsylvania Transatlantic Steamship Co., Wilmington, Del., recently was increased from \$100,000 to \$50,000,000.

Capitalized at \$300,000, the Munalbro Steamship Corp., Wilmington, Del., recently was incorporated by the Corporation Trust Co. of America.

The American Valve & Tank Co. has been incorporated in Delaware with a capital stock of \$400,000, by Charles C. Widding, Charles A. Wulfe, Samuel Springer and Horace G. Eastburn.

The Leavitt Lusitania Salvage Co. has been incorporated in Delaware with a capital stock of \$100,000, by the Colonial Charter Co., Wilmington, Del.

The Waterfront Scrap Iron & Metal Co., New York, has been incorporated with a capital stock of \$10,000, by N. Sentimiklossy, R. Levine, M. G. Reid and H. B. Davis, 522 Fifth avenue, New York.

The Radio Corp. of America has increased its capital stock in Delaware from \$525,000,000 to \$725,000,000.

Capitalized at \$100,000, the Hood Turbine Co., Boston, recently was incorporated to build turbine engines, etc., by Curtis D. Chase, Natick, Mass.; Robert J. Hurley, Revere, Mass.; Wal-

ter H. Smart, Framingham, Mass.; Arthur K. Bayley, Danvers, Mass.; and Joseph S. O'Neil, Belmont, Mass.

The Tampa Shipbuilding & Engineering Co. has leased its yard at Tampa, Fla., to the Oscar Daniels Co., which during the war operated a shipyard at Tampa with five launching ways on which were constructed large steel cargo vessels.

The Merchants & Mfrs. Transit Corp., Rochester, N. Y., recently was incorporated with a capital stock of \$100,000, by H. Barnard, 36 Main street, West Rochester, N. Y., and others.

The Atlantic Coast Ports Service Corp., Wilmington, Del., has been incorporated in Delaware to do wharfage and berthing of ships.

The Interwaterways Line, Inc., Wilmington, Del., has been incorporated to own and operate ships with a capital stock of \$1,000,000.

The Seaport Navigation Co. Eastport, Me., recently was incorporated with a capital stock of \$3,000,000, to engage in general trucking cartage and navigation.

The South Florida Contracting & Engineering Co., Key West, Fla., has been incorporated with a capital stock of \$100,000.

The Bethlehem Steel Corp. plans to expand its facilities at Sparrows Point, Md., plans having already been completed. The additions, it is estimated will cost about \$25,000,000. The present ore facilities will be greatly increased, including the expenditure of \$1,000,000 for deepening the ship channel from the main outlet to the piers.

Codina & Marques, Inc., 592 Montgomery street, Jersey City, N. J., recently was incorporated to manufacture life preservers, etc.

The Midland Barge Co., East Liverpool, O., recently was incorporated with a capital stock of \$100,000.

To eliminate delay to vessels requiring dry-docking in New York harbor, the Todd Shipyards Corp. has added three floating docks to its ship repair facilities. These additions give the five New York plants of the Todd corporation 18 floating drydocks and two graving docks.

The dismantling of the 40 wooden shipways at Hog Island is now under way the work having been started several weeks ago by the Buffalo Wrecking Co., Buffalo, N. Y. The work will require several months. It is the intention of the shipping board to retain 10 permanent shipways built of concrete and to lay out the 1000-acre plant so that with the expected revival of ocean commerce it can again be operated.

The city of Gulfport, Miss., has let a contract for the construction of a wharf at an estimated cost of \$12,000.

The Marine Ways Machine Co., Petersburg, Fla., is reported planning to expend about \$50,000 on improvements to its plant.

The Alberta & Arctic Transportation Co., Ft. McMurry, Alberta, Can., has secured a site and will start soon on the erection of a shipyard for the construction of its own vessels.

Plans are being prepared by the city of Dubuque, Iowa, to build steel and concrete docks, 200 to 300 feet long, involving the ex-

penditure of about \$100,000. S. Edwards, United States engineers' office, is engineer in charge of the project.

The newly formed Oregon-Washington Holding Corp., Seattle, has let a contract for the construction of a wharf, 1021 feet long and 80 feet wide.

The Southern Yacht club of New Orleans has started plans for the construction of a ship repair yard to take care of a fleet of more than 300 power boats.

The Shiner Compress Co. will erect wharves, 120 x 500 feet, and sheds of mill construction at Shiner, Tex. Two tubular boilers, each 72 inches by 18 feet will be installed.

The Herman Gumz Boiler Works, Newark, N. J., recently was incorporated with a capital stock of \$100,000, by Herman H. Gumz, A. W. Stevenson and F. Mullins.

The U. S. S. Milwaukee Co., Wilmington, Del., has been incorporated in Delaware with a capital stock of \$500,000, to salvage ships, etc.

The Pittman-Smith Engineering Co., Wilmington, Del., has been incorporated in Delaware with a capital stock of \$300,000, to engage in business as engineer and builder.

The Rapid Coaling Co. of New York, Wilmington, Del., recently was incorporated in Delaware with a capital stock of \$120,000, to own and operate tugs, barges, etc.

The Adams Boat Line, Sarasota, Fla., has been incorporated with a capital stock of \$50,000, to build, purchase, sell, own, equip, lease, charter and operate vessels, etc. J. E. Battles, John Savarese and H. S. Smith are the incorporators of the company.

New Trade Publications

WELDING TORCH—A bulletin entitled *Facts*, giving a description of welding torch and mixture principles of interest to welders, engineers, mechanics, foundrymen, manufacturers, purchasing agents and all users or prospective users of welding torches, is being distributed by the Bastian-Blessing Co., 131 West Austin avenue, Chicago. Illustrated with photographs and drawings, the booklet shows the various flames and effects of flames under certain mixture conditions. The photographs are in colors.

STEAMSHIP SERVICES—Reprints from the March and April issues of *MARINE REVIEW*, combined in one pamphlet, are being distributed by the Harriman marine interests. These reprints tell of the rise of W. A. Harriman, son of the late "railroad king," and of the ramifications of the steamship lines and services under him. The pamphlet is illustrated with the maps and photographs as published in *MARINE REVIEW* and in themselves tell the story of the Harriman interests.

SUPERHEATERS—The Superheater Co., New York and Chicago, formerly the Locomotive Superheater Co., is circulating a bulletin describing superheaters for stationary power plants. It tells what superheat steam is, how steam is superheated, describes the re-

Recent Business Changes in the Marine Trade

Branch offices of the Vacuum Oil Co., 61 Broadway, New York, have been opened at Buffalo, N. Y., and Dallas, Tex. The Buffalo office will cover New York west of the Hudson river, supplying the trade from the company's plant at Rochester, N. Y., while the Dallas office will cover Texas and Oklahoma, with warehouse stocks carried in Dallas, Texas City and Oklahoma City.

The United States shipping board, through the division of operations, has opened an office in the Liberty Central Trust building, St. Louis, which is the first inland office the board has established. T. Park Hay is in charge of the new office.

The marine office and marine service department maintained by the Diamond Power Specialty Co., Detroit, at 126 Liberty street, New York, have been transferred to the Engineering building, 90 West street, New York. Maurice Nicholls continues as manager at the new address.

The Master Tool Co., 203 East St. Clair avenue, Cleveland, has been formed to manufacture a new line of pneumatic tools, and will specialize in the reclaiming of all types and makes of such equipment. The officers of the company

are: J. Nightingale, president; Charles F. Overly, vice president, and general manager; William Eckert, secretary-treasurer. C. F. Overly is manager of sales.

Waterhouse-Hill, Inc., is the name of a new passenger ticket, tourist agency and general shipping office opened in Seattle by Norman Waterhouse and Robert C. Hill, well known in the marine and business circles of the Pacific northwest.

Ralph S. Cooper, vice president and general sales manager of the Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, who has just returned after eight months in Europe establishing branch offices and agencies for the company, has been appointed general manager in addition to his other duties.

The John Corbett Co., Inc., has been organized to engage in foreign and domestic freight brokering and forwarding, with headquarters at 510 American building, Baltimore, and a branch office at 24 Stone street, New York.

Branch offices have been opened by the Power Specialty Co., 111 Broadway, New York, in Kansas City, Mo., and Dallas, Tex. William F. Meyer, for the past two

years with the Chicago office of the company, is in charge of the Kansas City office, 512 Reliance building, and M. W. Brown is in charge of the Dallas office, 627 Linz building.

Offices of the Kerr Steamship Co. in New Orleans have been closed as a result of the decision of the shipping board not to allocate from gulf ports transatlantic berths to lines not domiciled on the gulf. The Beaumont and Galveston, Tex., offices will be continued.

The Chicago Steamship Co., which intends to operate vessels between Great Lakes ports and New York via the barge canal, in June planned to start its first boat from Milwaukee to Buffalo. Three ships, it is said, will be operated in connection with the canal.

Establishment of a receiving and delivering station at 132nd street and Lincoln avenue, New York, to be known as the Bronx terminal, is announced by the Clyde Steamship Co. and the Mallory Steamship Co., Pier 36, North River, New York.

Headquarters of the Pacific & Eastern Steamship Co., Inc., have been moved to the Singer building, 149 Broadway, New York.

lationship of superheat and boilers, explains the use of reciprocating engines and steam turbines, and describes the installation of superheaters in existing plants. Illustrations show the superheaters in various types of boilers and show also the company's plant at East Chicago, Ind., where the superheaters are manufactured.

FORCED DRAFT—General specifications, plans and tables of approximate dimensions and weights of Howden forced draft fans and engines are given in a bulletin published by James Howden & Co. of America, Inc., Wells-ville, N. Y., affiliated with James Howden & Co., Ltd., Glasgow, Scotland. The specifications describe a fan of the double inlet slow speed type and an engine of the vertical, single cylinder, enclosed, double-acting, forced lubrication type.

EVAPORATOR—The Reilly self-scaling evaporator is fully described and illustrated in a bulletin issued by the Griscom-Russell Co., 90 West street, New York. These evaporators are adapted for marine service. The bulletin is in pamphlet form, contains 24 pages and gives tables showing the various capacities, sizes, weights, connection sizes, code names, etc.

VALVES—The Lunkenheimer Co.'s 12-page booklet describing a special type of valve is being circulated from the company general offices at Cincinnati. Price lists of valves and principal parts and tables of dimensions are given in the booklet which contains halftone illustrations.

REFRIGERATING APPARATUS—The Wittmeier Machinery Co., 850-60 North Spaulding avenue, Chicago, is distributing a 20-page

book describing and illustrating the refrigerating machines, carbonic anhydride systems, carbonic acid gas manufacturing plants, and liquefying apparatus manufactured by the company. Compressors, condensers, etc., are illustrated along with buildings and ships equipped with the company's refrigerating products.

MARINE ELECTRICAL DEVELOPMENT—"Developments of Electricity in the Merchant Marine," is the title of an attractive 16-page booklet recently published by the Cutler-Hammer Mfg. Co., Milwaukee and New York, and which tells in a brief and interesting way the story of the evolution of the engine-propelled ship from the historic *CLERMONT* to the efficient present-day craft propelled by the steam turbine or the diesel engine. The booklet is illustrated with views taken aboard the *SOLITAIRE*, and several controllers are shown as typical of those required for marine work.

ROPE—Under the title, "Rope and the Merchant Marine," the Plymouth Cordage Co., North Plymouth, Mass., and Welland, Ont., has published a 40-page booklet of drawings, illustrations, specifications and general description of the company's product. The pictures show the various kinds of rope in use. The book gives cordage terms and definitions, describes a boatswain's equipment, tells of the use and care of rope and relates the history of the company and the American merchant marine.

PIPE STILLS—As designed and used in oil refineries, pipe stills are fully described in word and picture in a booklet of 40 pages published by the Power Specialty Co., 111 Broadway, New York. Most of the illustrations are drawings

and some are charts. Tables of specifications, results of experiments, and baume, specific gravity and pounds per gallon measurements are presented. A well written and thorough description is set forth in the pages.

OIL ENGINES—In a neatly printed, well illustrated and fully descriptive 32-page booklet, the Fulton Iron Works Co., St. Louis, is telling the trade of its diesel engines. It goes into history to tell of the invention of the diesel engine and then gives a clear description of the Fulton product. The various parts are described, tables are given for various uses and of various experiments, and pictures of actual installations are shown.

ELECTRIC DRILLS—The Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, is distributing circulars describing its electric drill stands and portable drills. The descriptions are brief, but to the point, illustrations being used to make the descriptions clear.

CONVEYOR IDLER—A self-aligning, all steel troughing belt conveyor idler is illustrated and described in a 4-page folder issued by the C. W. Hunt Engineering Corp., 143 Liberty street, New York. The construction is fully told.

LIFEBOATS AND DAVITS—Mechanical boat davits for operation by one man, nesting and collapsible lifeboats, releasing gear and falls controllers are set forth in words and pictures in a neat pamphlet being issued by the Steward Davit & Equipment Corp., 17 Battery place, New York. A night scene depicting the sinking of the *GOVERNOR* near Puget Sound illustrates the folded front cover. Inside pages show photographs of the boat and tell of the equipment used.